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NASA CR-144945-4
Part 4 of 4

A COMPILATION OF SPACECRAFT LOADS DATA

FROM

FOUR TITAN CENTAUR LAUNCH VEHICLE FLIGHTS

VOLUME II

VIBRATION POWER SPECTRAL DENSITY ANALYSIS

OF LAUNCH AND MAX Q FLIGHT

Compiled by George Kachadourian

(NASA-CR-144945-Pt-4) A COMPILATION OF SPACECRAFT LOADS DATA FROM FOUR TITAN CENTAUR LAUNCH VEHICLE FLIGHTS. VOLUME 2, PART 4: VIBRATION POWER SPECTRAL DENSITY ANALYSIS OF LAUNCH AND MAX Q FLIGHT (General
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Unclas
G3/15 42479
RECEIVED
NASA STI FACILITY
INPUT BRANCH

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January 1977

NASA CR-144945

VOLUME II

VIBRATION PSD OF LAUNCH & MAX Q FLIGHT

SECTION 4

TC-3/VIKING B SPACECRAFT

Launch Date September 9, 1975

Contents

Contents Description - Section 4 - TC-3 Data

This section presents Power Spectral Density (PSD) plots of the eight parameters listed below. All analyses are of two second time samples. The data is displayed in the pairs of a two second time sample and its PSD analysis.

The analyses cover the Stage 0 Ignition/Lift Off and Max Q periods of time for the TC-3 launch. A matrix of time samples and analyses performed are shown here in Table 1. Instrument list and sensor location are presented in Table 2 and Figure 1 respectively.

Parameters for Which PSD Analyses were Performed

Parameter	Description
CY182Ø CY183Ø CY184Ø CY185Ø	Vibration measurements on the Viking Orbiter Bus
$\ddot{X}_L$ $\ddot{Y}_L$ $\ddot{Z}_L$	Acceleration of the Viking Lander Capsule (VLC) c. g. obtained through transformation of Viking Lander Capsule Adapter (VLCA) strain gages assuming a rigid VLC
$\ddot{Z}_B$	Average of CY182Ø, CY184Ø and CY185Ø

Table 4.1 - Data Analysis Matrix: TC-3 PSD Analyses

Event Time / Sample Rate — IRIG No. / Sensor No.	#18 CY182Ø	#17 CY183Ø	#16 CY184Ø	#15 CY185Ø	$\ddot{X}_L$	$\ddot{Y}_L$	$\ddot{Z}_L$	$\ddot{Z}_B$
Pre Launch 67132-67134	1024 & 4096	1024 & 4096	1024 & 4096	1024 & 4096	1024	1024	1024	1024
Stg. 0 Ign. - 1 67140.2-67142.2	4096	4096	4096	4096	1024	1024	1024	1024
Stg. 0 Ign. - 2 67142.2-67144.2	4096	4096	4096	4096	1024	1024	1024	1024
Stg. 0 Ign. - 3 67144.2-67146.2	-	-	-	-	1024	1024	1024	1024
Max Q - 1 67175-67177	4096	4096	4096	4096	1024	1024	1024	1024
Max Q - 1.5 67177-67179	4096	4096	4096	4096	1024	1024	1024	1024
Max Q - 2 677179-67181	4096	4096	4096	4096	1024	1024	1024	1024
Max Q - 2.5 677181-67183	4096	4096	4096	4096	1024	1024	1024	1024
Max Q - 3 67183-67185	4096	4096	4096	4096	1024	1024	1024	1024
Max Q - 3.5 67185-67187	4096	4096	4096	4096	1024	1024	1024	1024

Note: The numbers 4096 and 1024 indicate the digitization rate in samples per second used in processing the data.

TABLE 4.2 FM/FM TELEMETRY INSTRUMENTATION, 2208.5 MHz LINK , TC-3, VIKING B

MEAS. NO.	DESCRIPTION	JPL DESIGNATION	RANGE		UNITS	ACCURACY	FM/FM CHANNEL	FILTER CUT OFF FREQUENCY - Hz	
			LOW	HIGH				A 1024 SPS	B 4096 SPS
CA886Y	Fwd.Equip.Comp.Amb.	-	120	150	db	5%	19	—	2800
CY182Ø	Longit.Vib; Foot H	2001AC1	-30	30	G	5%	18	133	2100
CY183Ø	Radial Vib.; Bay 7/8	2001AC2	-12	+12	G	5%	17	134	1580
CY184Ø	Longit. Vib., Foot C	2001AC3	- 5	+ 5	G	5%	16	135	1200
CY185Ø	Longit. Vib., Foot R	2001AC4	- 5	+ 5	G	5%	15	137	900
CY186S	VLCA #750 Strain 1	2001SG1	10000C	8000T	Lbs	5%	14	140	—
CY187S	VLCA #751 Strain 2	2001SG2	10000C	8000T	Lbs	5%	13	145	—
CY188S	VLCA #752 Strain 3	2001SG3	10000C	8000T	Lbs (1)	5%	12	153	—
CY189S	VLCA #753 Strain 4	2001SG4	10000C	8000T	Lbs	5%	11	160	—
CY190S	VLCA #754 Strain 5	2001SG5	10000C	8000T	Lbs.	5%	10	180	—
CY191S	VLCA #755 Strain 6	2001SG6	10000C	8000T	Lbs.	5%	9	200	—
CY192P	VLC Bioshield DP		-0.25	0.75	PSID	5%	4	—	—
CY193P	VLC Bioshield Press.		0	16	PSIA	5%	3	—	—

(1) Range shown is max limit. Each gage will have a different range dependent on its calibration value.

A. This is a special set of filters which, in conjunction with discriminator characteristics, results in phase errors of less than 1° between VCO 9 through 18 below 40 Hz

B. These are twice the standard IRIG filter.

TABLE 4.3 - TIME OF FLIGHT EVENTS: TC-3/VIKING B SPACECRAFT (9/9/75 Launch)

FLIGHT EVENT	Predicted Sec from LO	Actual Hrs Min Sec	Actual Seconds	From LO Seconds	From Stg I Ign. Seconds	
1 STG O IGN. /LO	0	18:39:00	67140	0		
2 MACH 1/MAX Q	50	18:39:42 ± 5	67182 ± 5	42 ± 5		
3 FBR RELEASE	100	18:40:40	67240	100		
4 STG O BO		18:40:44.5	67244.5	104.5		
5 STG I IGN	110	18:40:51.6	67251.6	111.6	0	
6 JETT SRM	122	18:41:02.95	67262.95	122.95	11.35	
7 STG I BO	259	18:43:20.85	67400.85	260.85	149.25	
8 STG II IGN	259.7	18:43:21.6	67401.6	261.6		
9 JETT SHROUD	270	18:43:31.6	67411.6	271.6		
10 G II BO	468	18:46:48.3	67608.3	468 3		
11 JETT STG II	474	18:46:53:25	67613.25	473.25		
12 MES-1	485	18:47:04 8	67624.8	484.8		
13 MECO-1	613	18:49:13 1	67753.1	613.1		
14 MES-2	1699	19:07:26.8	68846.8	1706.8		
15 MECO-2	2005	19:12:27.7	69147.7	2002.7		
16 S/C SEP.	2225	19:16:07.7	69367.7	2227.7		

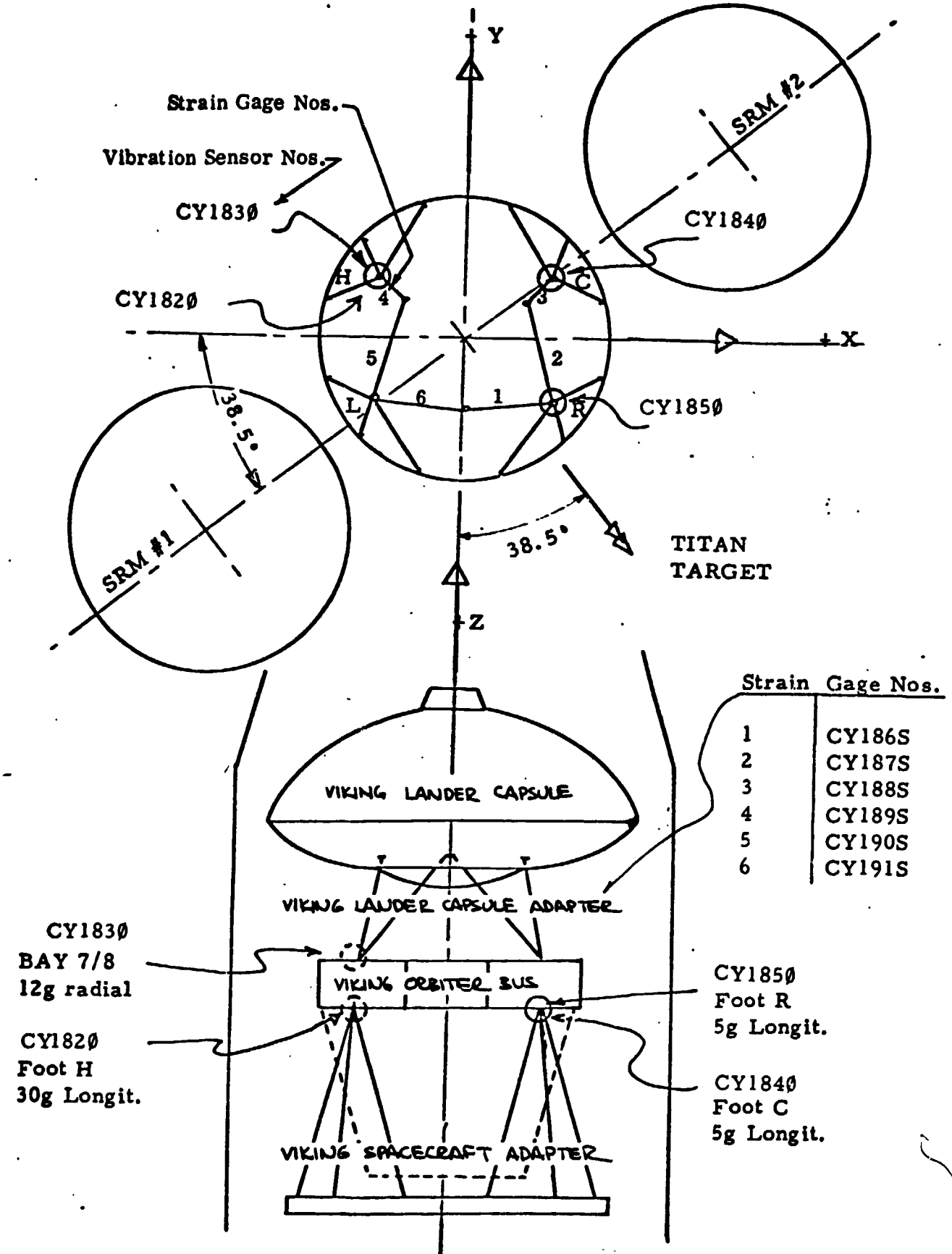
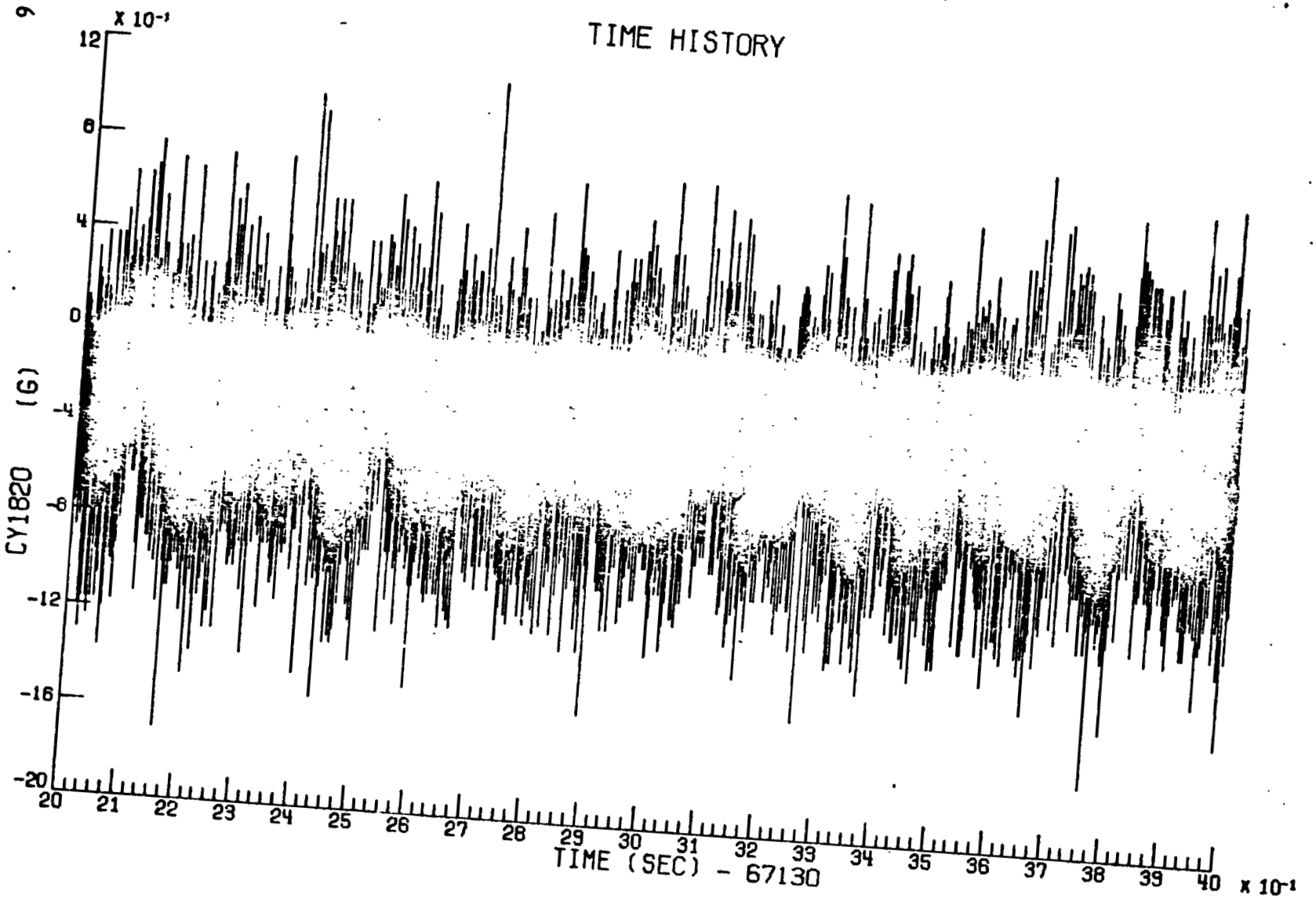


FIGURE 4.1 VIKING SPACECRAFT INSTRUMENT LOCATIONS



MAX = 1.100

MIN = -1.700

VIKING B FLT (CIF)

PRE-IGNITION

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4096 SPS

Figure 4.2a

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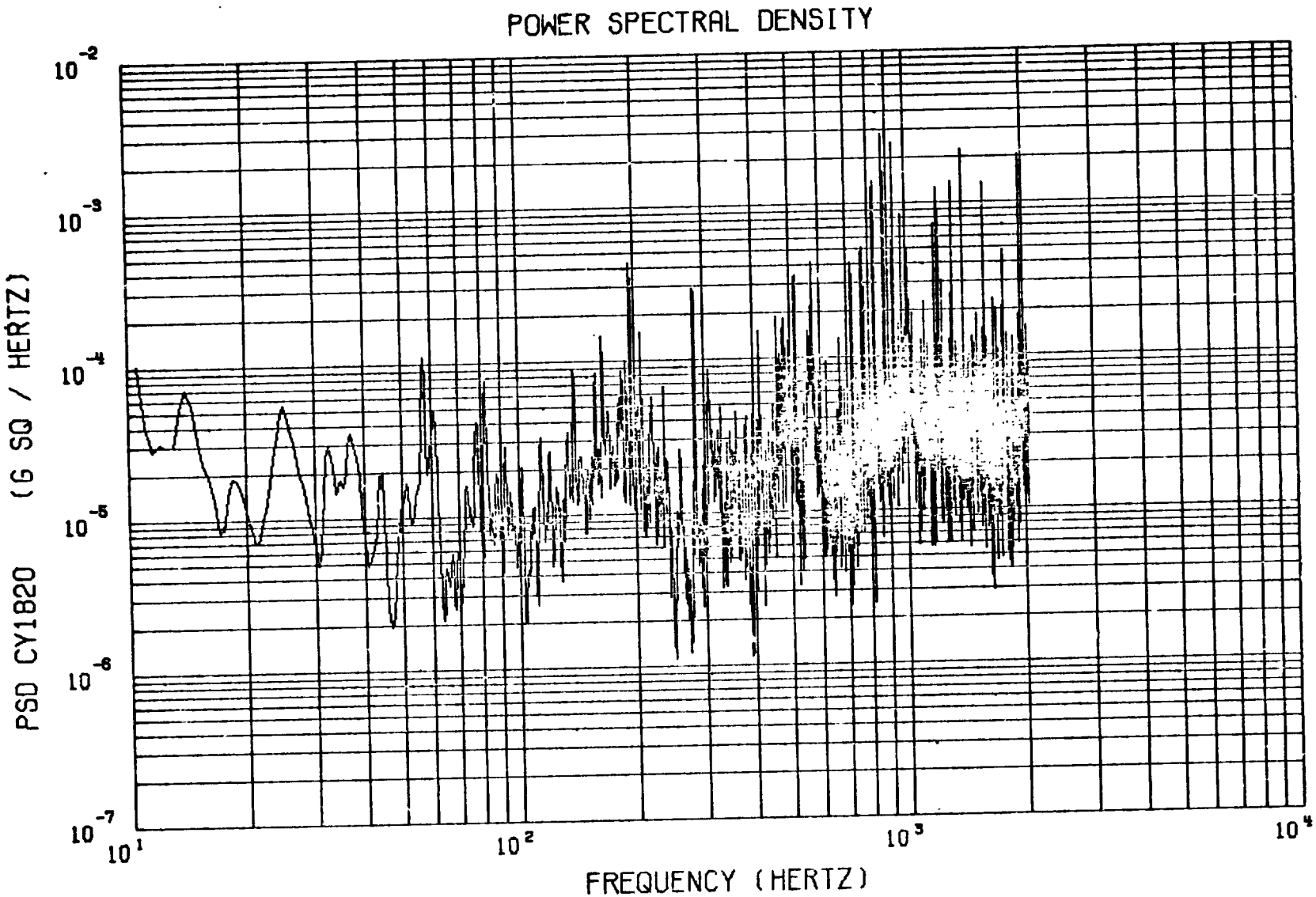


ΔF = .499 START = 67132.000 SEC STOP = 67194.000 SEC

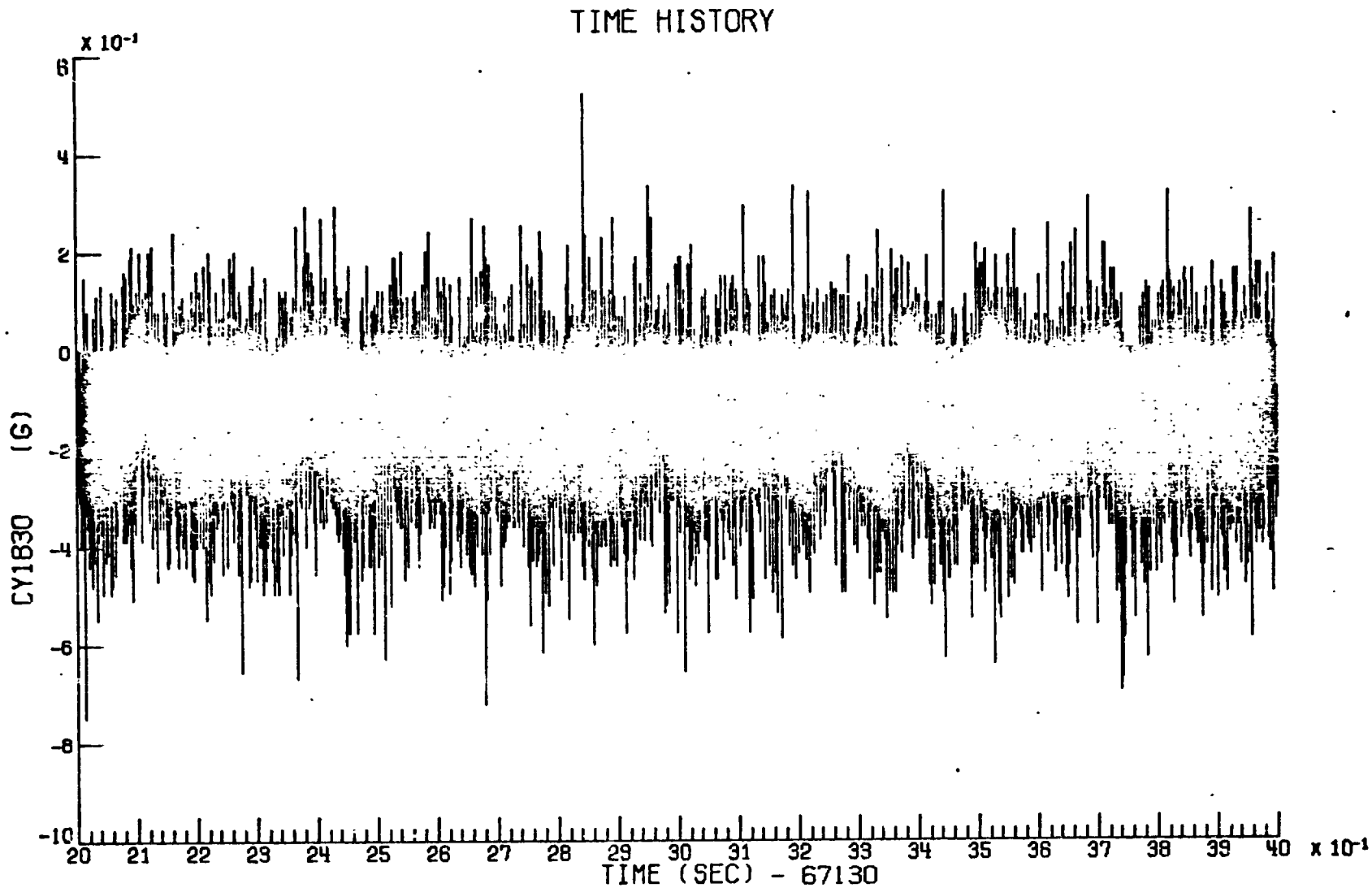
MEAN = -32623×10^{-5} $\sigma^2 = 11279 \times 10^{-5}$ $\sigma = 33584 \times 10^{-5}$ $3\sigma = 10075 \times 10^{-4}$

VIKING B FLT (CIF) PRE-IGNITION CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.2b



MAX = .520

MIN = -.747

VIKING B FLT (CIF)

PRE-IGNITION

4096 SPS

CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.3a

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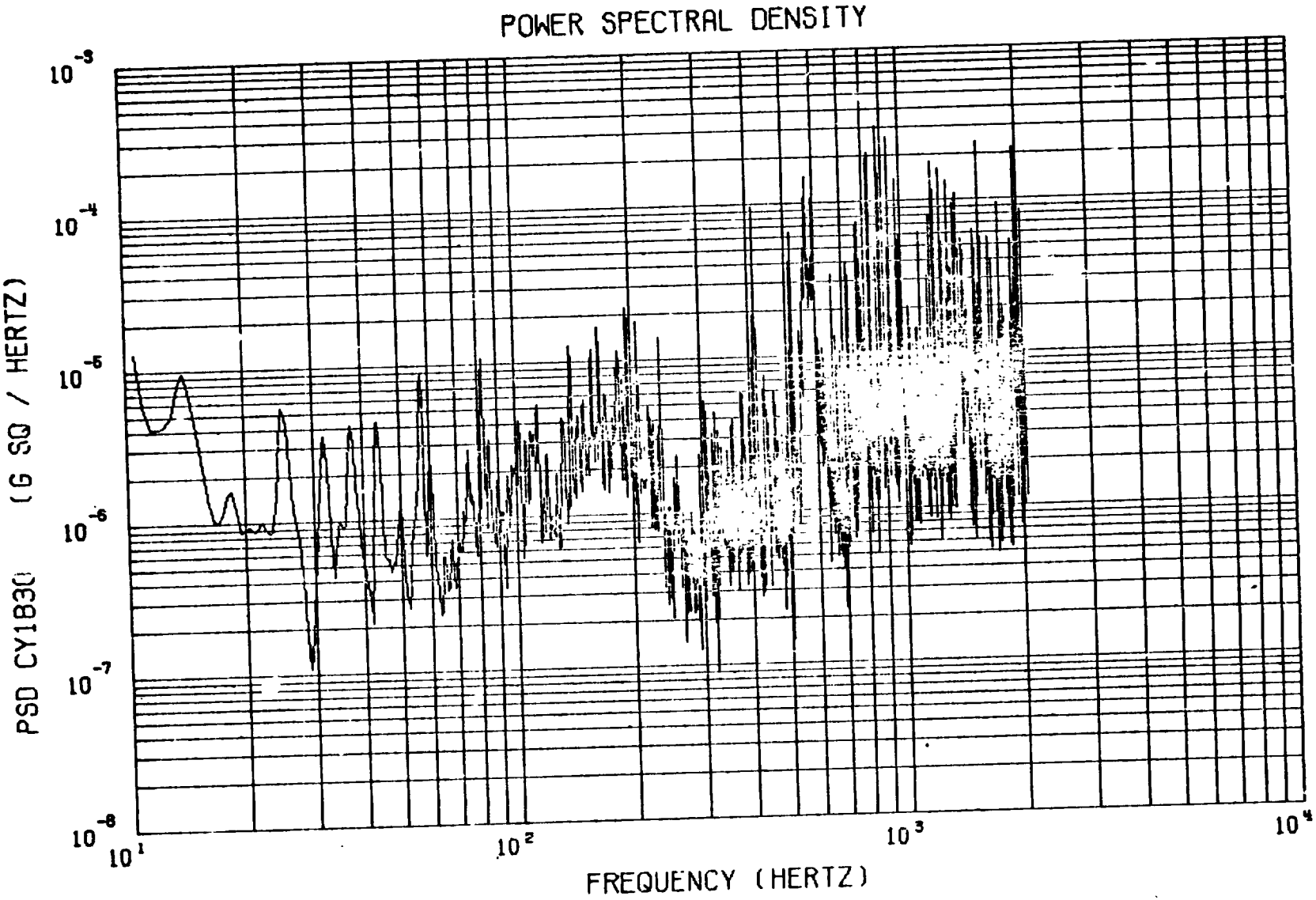


ΔF = .499 START = 67132.000 SEC STOP = 67134.000 SEC

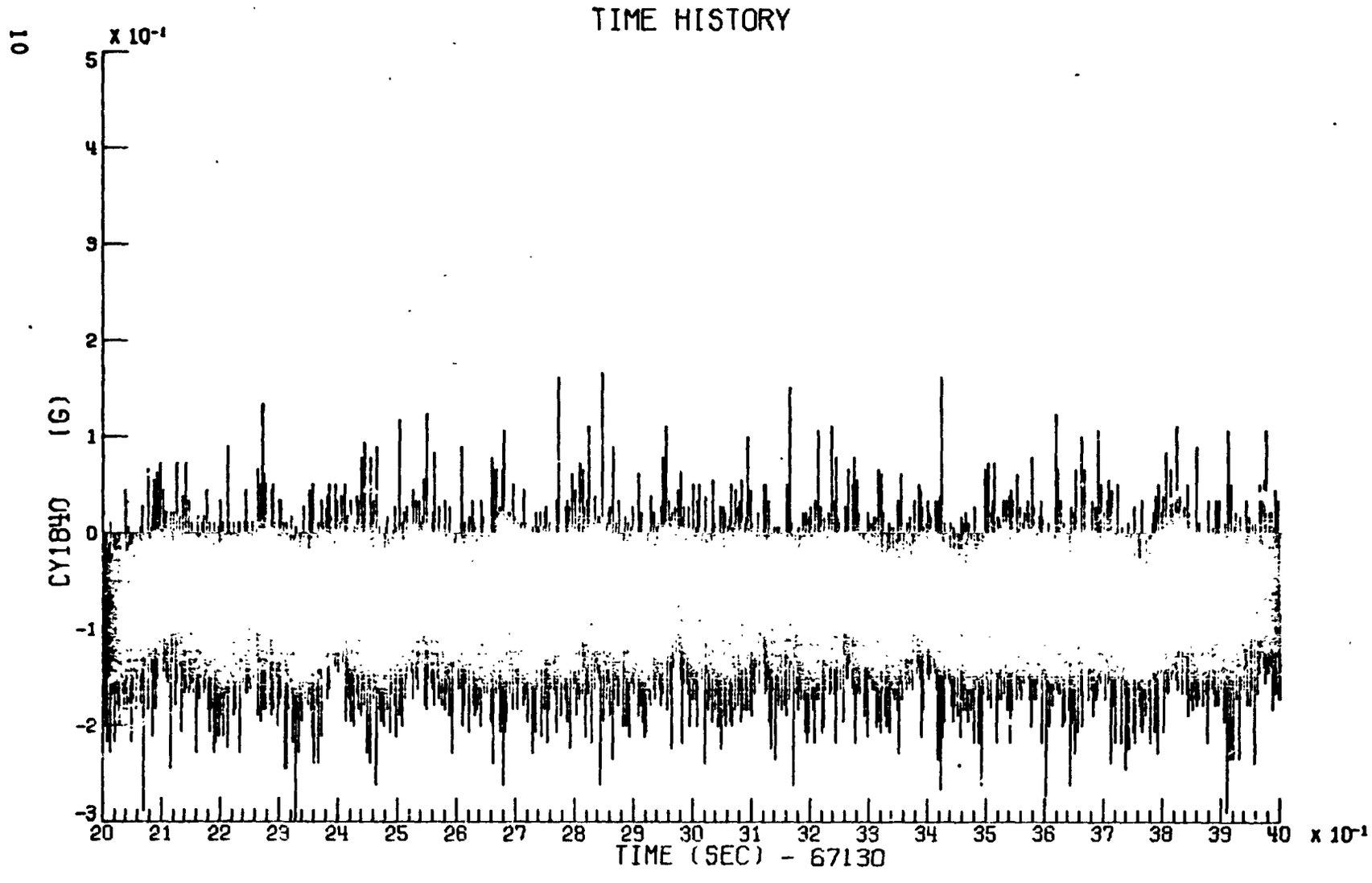
MEAN = -13269 x 10^{-6} σ^2 = 18559 x 10^{-6} σ = 13623 x 10^{-6} 3σ = 40869 x 10^{-6}

VIKING B FLT (CIF) PRE-IGNITION CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.3b



MAX = .166

MIN = -.300

VIKING B FLT (CIF)

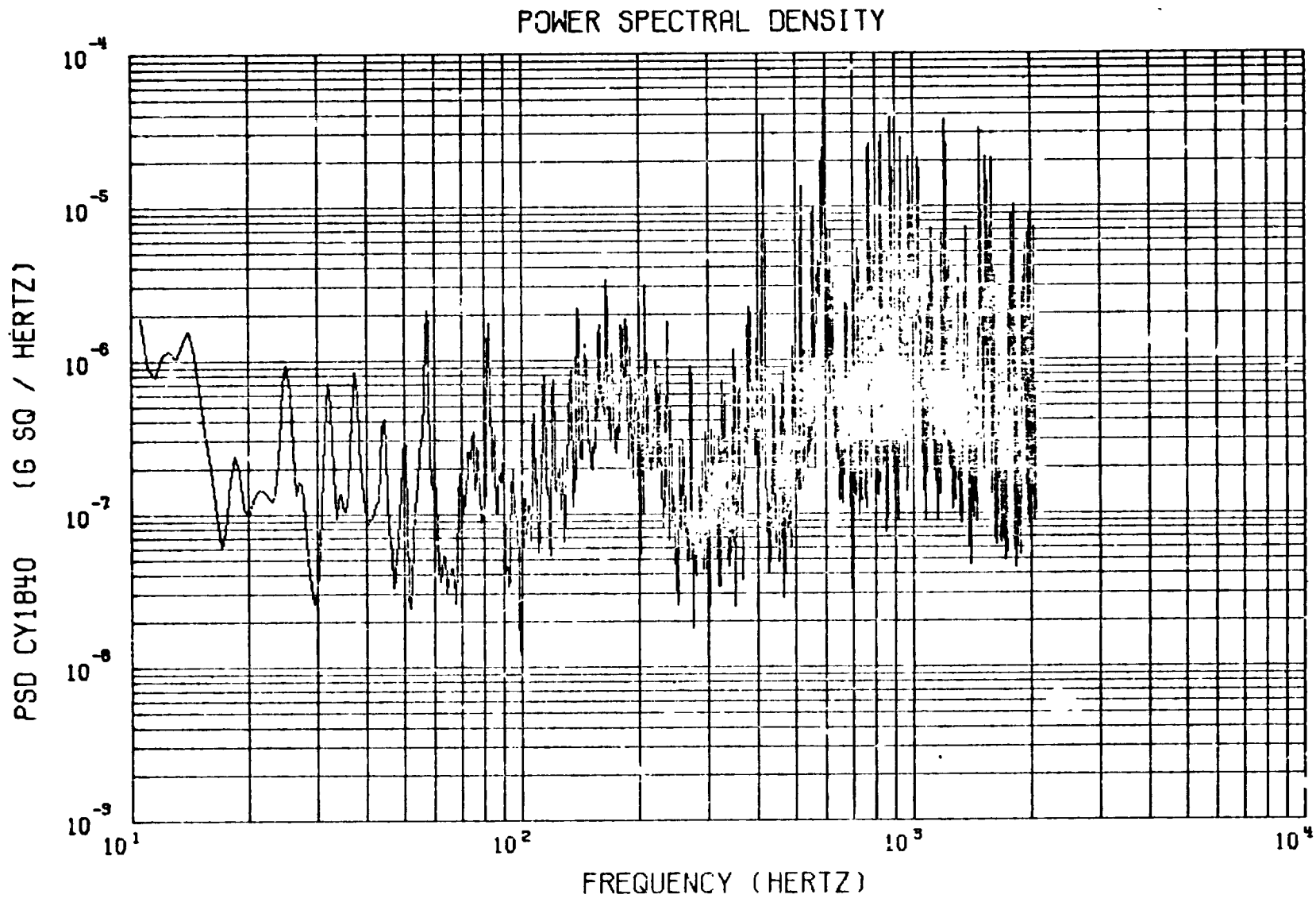
PRE-IGNITION

4096 SPS

CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.4a



ΔF = .499 START = 67132.000 SEC STOP = 67134.000 SEC

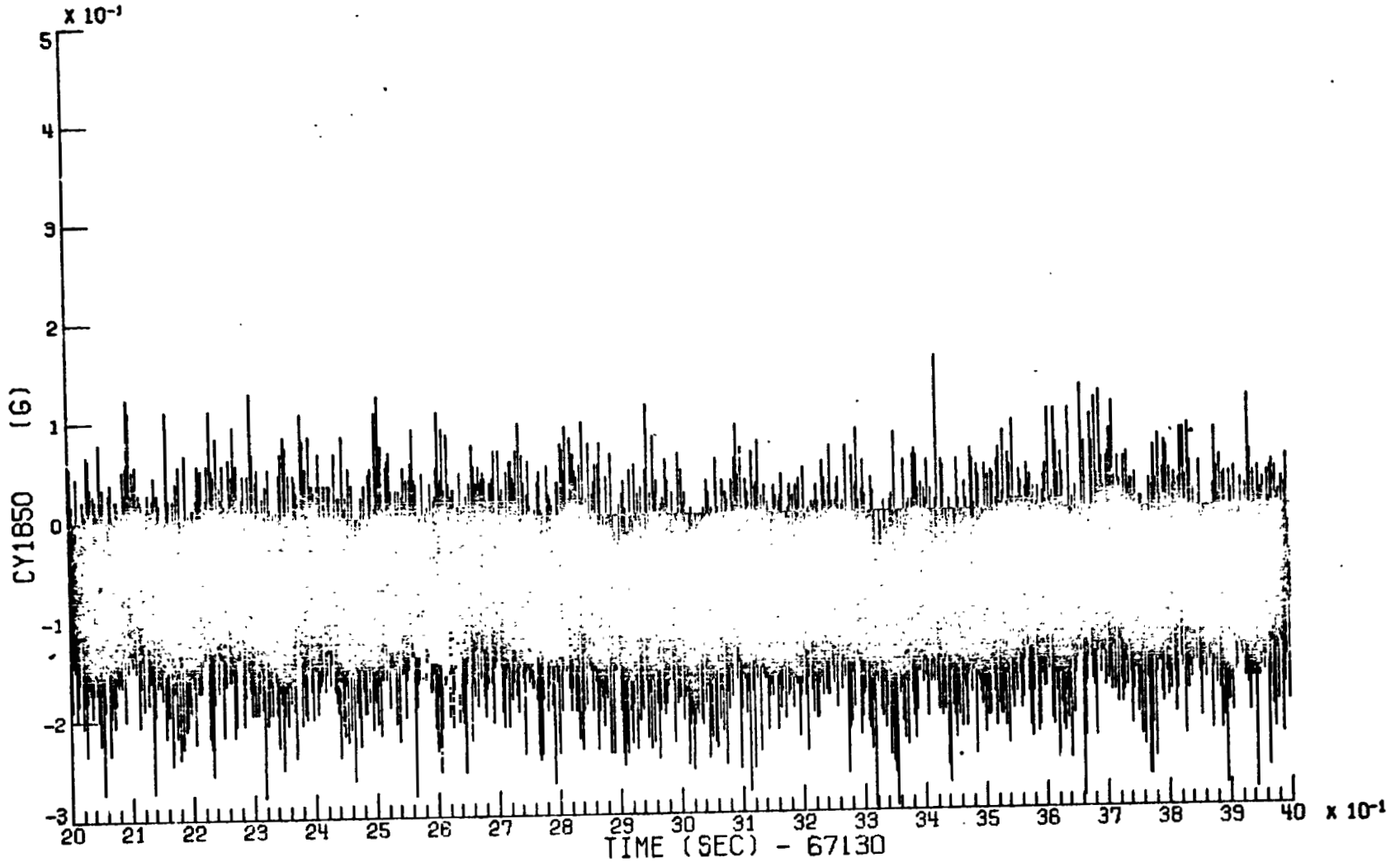
MEAN = -71181 x 10^{-6} σ^2 = 31859 x 10^{-7} σ = 66444 x 10^{-6} 3σ = 16933 x 10^{-6}

VIKING B FLT (CIF) PRE-IGNITION CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.4b



MAX = .155

MIN = -.294

VIKING B FLT (CIF)

PRE-IGNITION

4096 sps

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.5a

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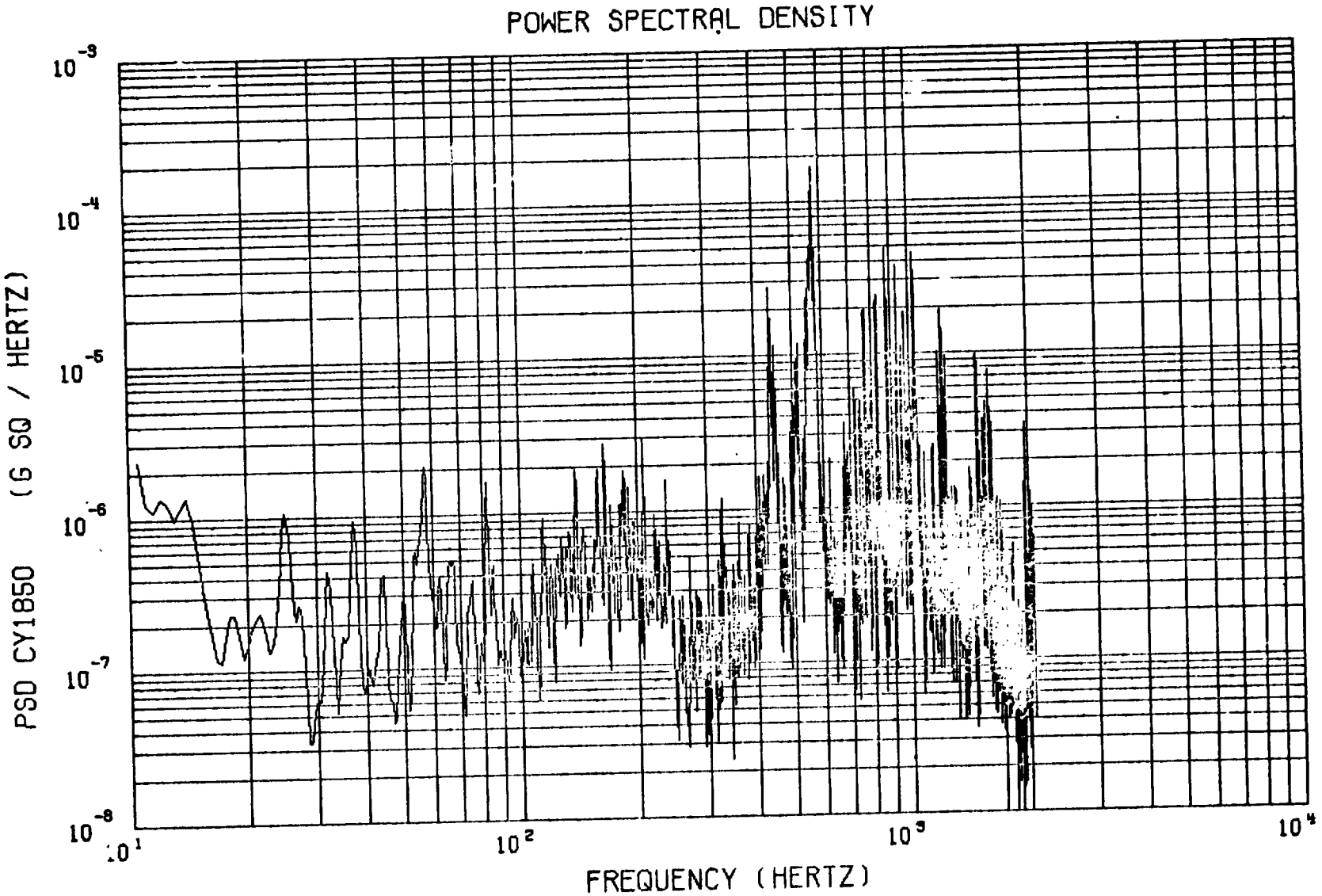


ΔF = .499 START = 67132.000 SEC STOP = 67194.000 SEC

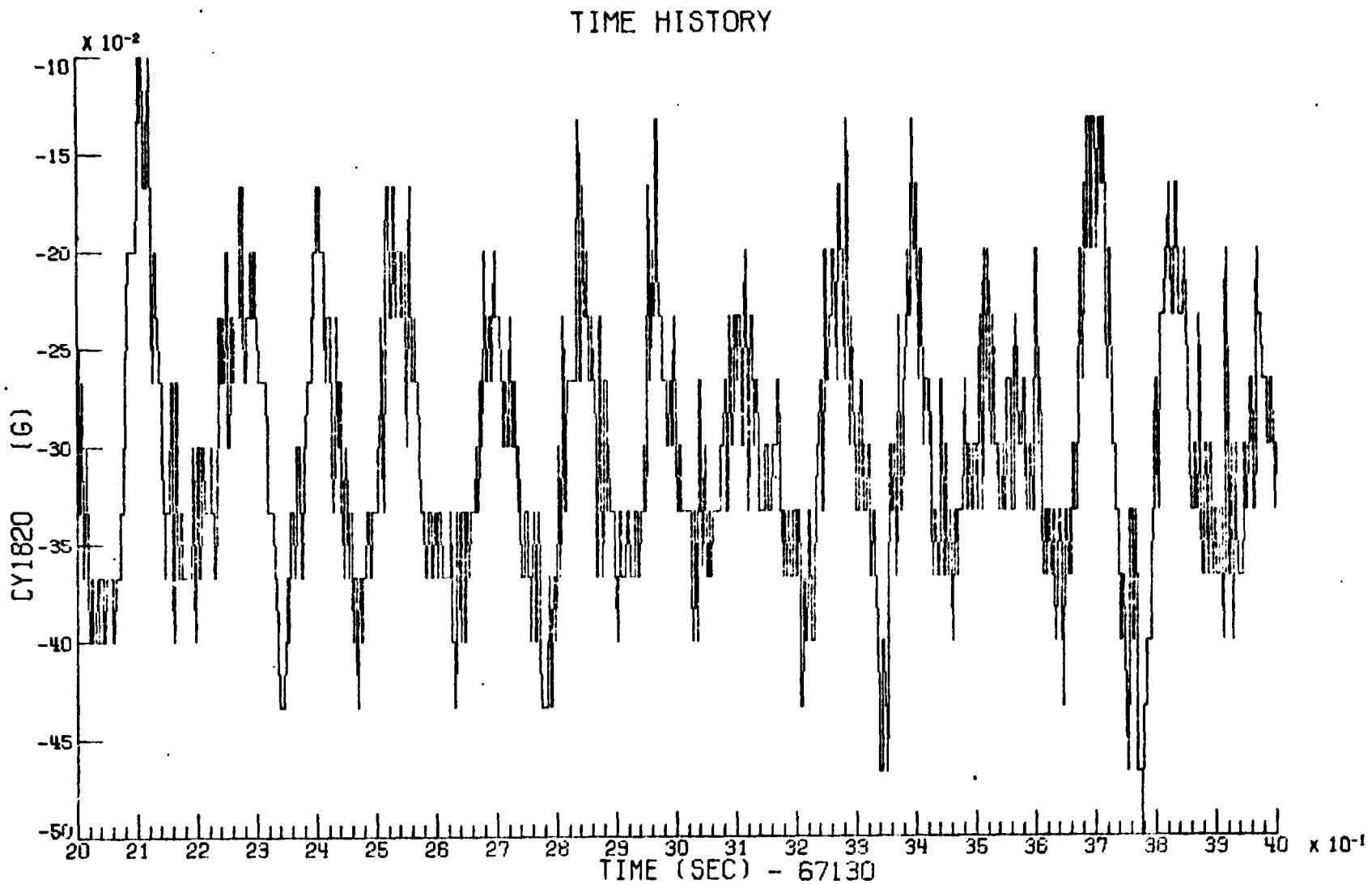
MEAN = -72988 X 10^{-6} σ^2 = 41108 X 10^{-7} σ = 64115 X 10^{-8} 3σ = 19234 X 10^{-5}

VIKING B FLT (CIF) PRE-IGNITION CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.5b



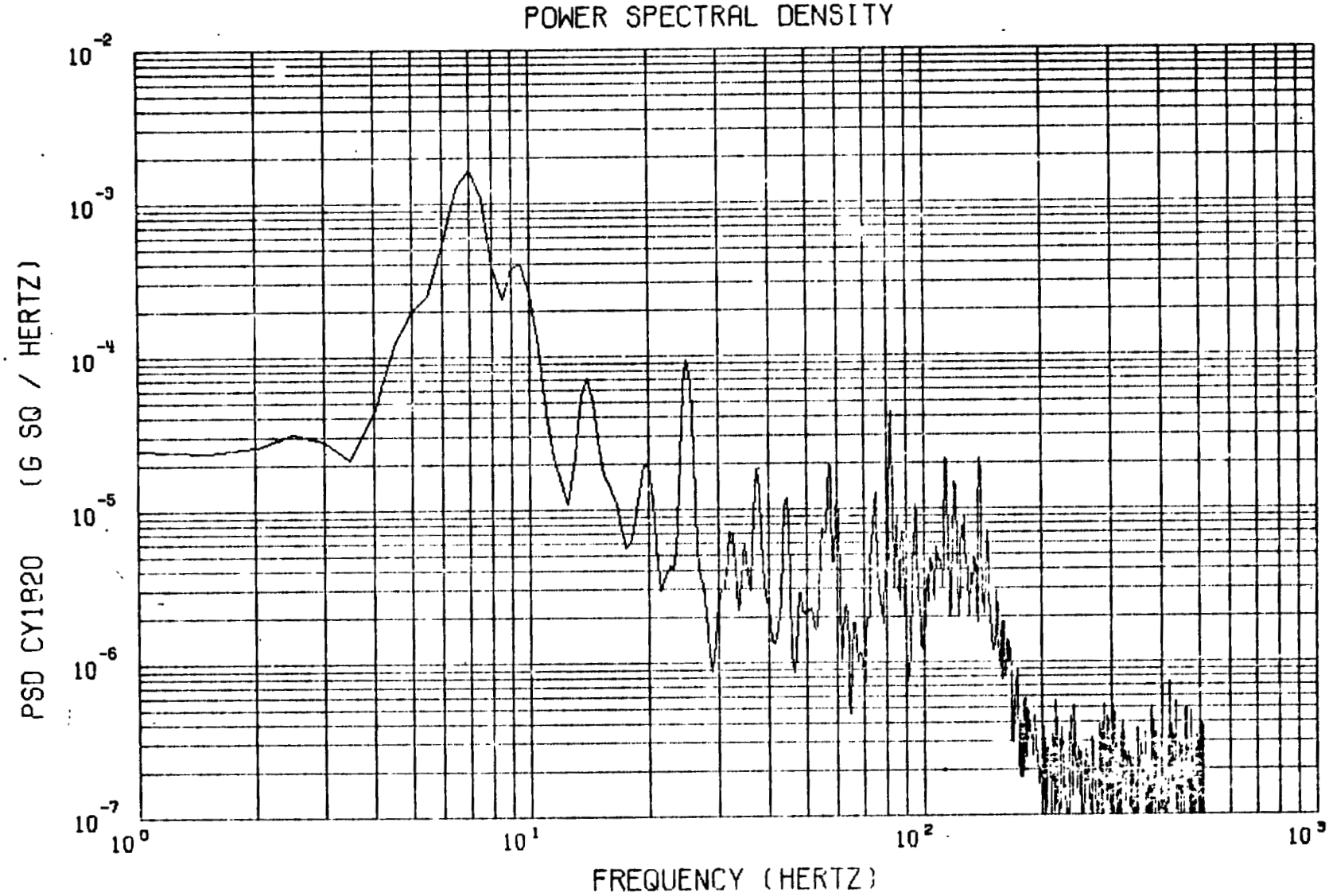
MAX = -.100 MIN = -.500

VIKING B FLT (CIF) PRE-IGNITION CY1820

1024 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.6a



ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

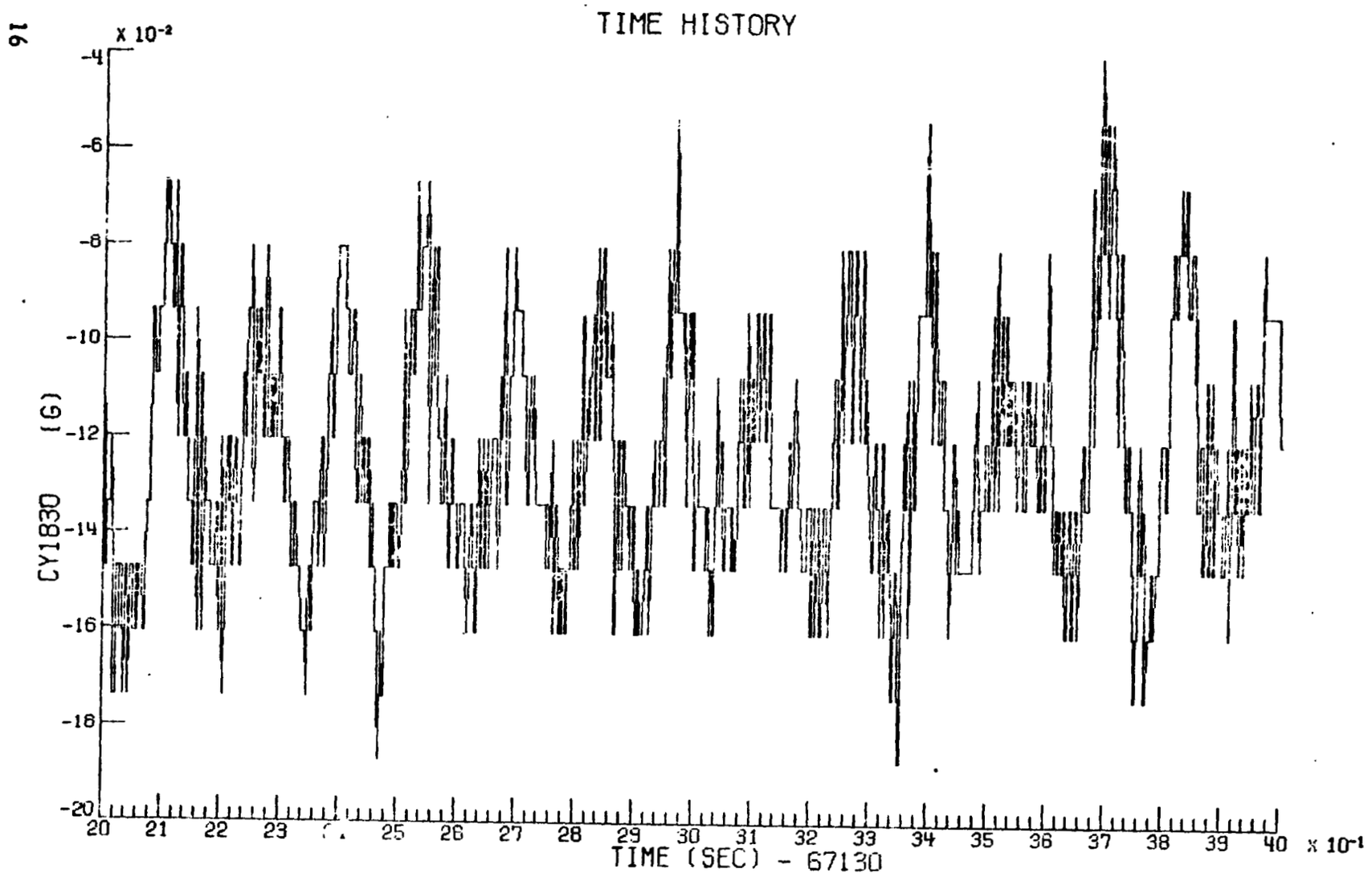
MEAN = -30273×10^{-5} $\sigma^2 = 46414 \times 10^{-7}$ $\sigma = 68128 \times 10^{-8}$ $3\sigma = 20438 \times 10^{-5}$

VIKING B FLT (CIF) PRE-IGNITION CY1820

1024 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM - 09/22/75

Figure 4.6b



MAX = -.040

MIN = -.187

VIKING B FLT (CIF)

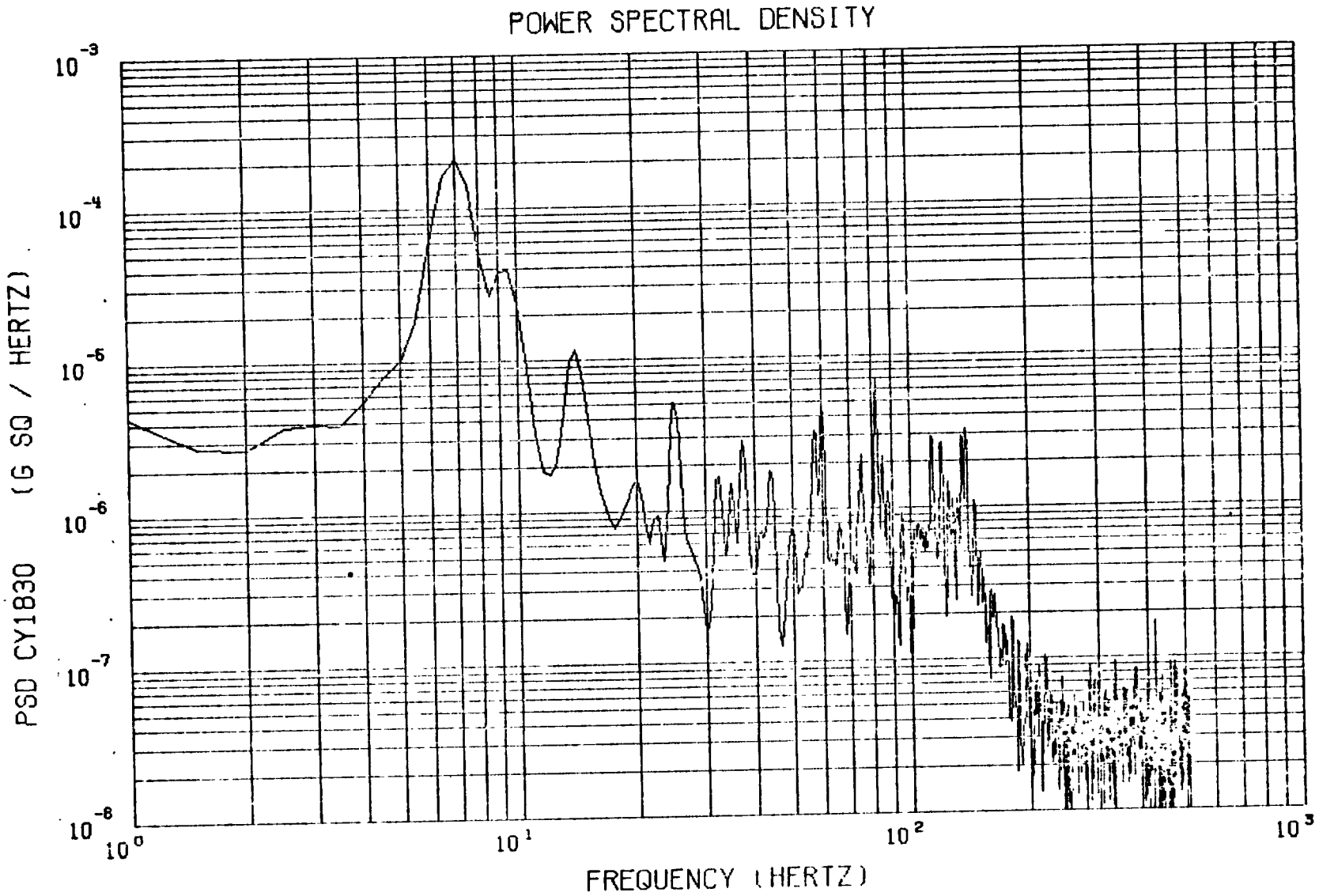
PRE-IGNITION

CY1830

NASA-LANGLEY STRUCTURAL ANALYSIS PROGRAM 09/22/75

1024 SPS

Figure 4.7a



ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

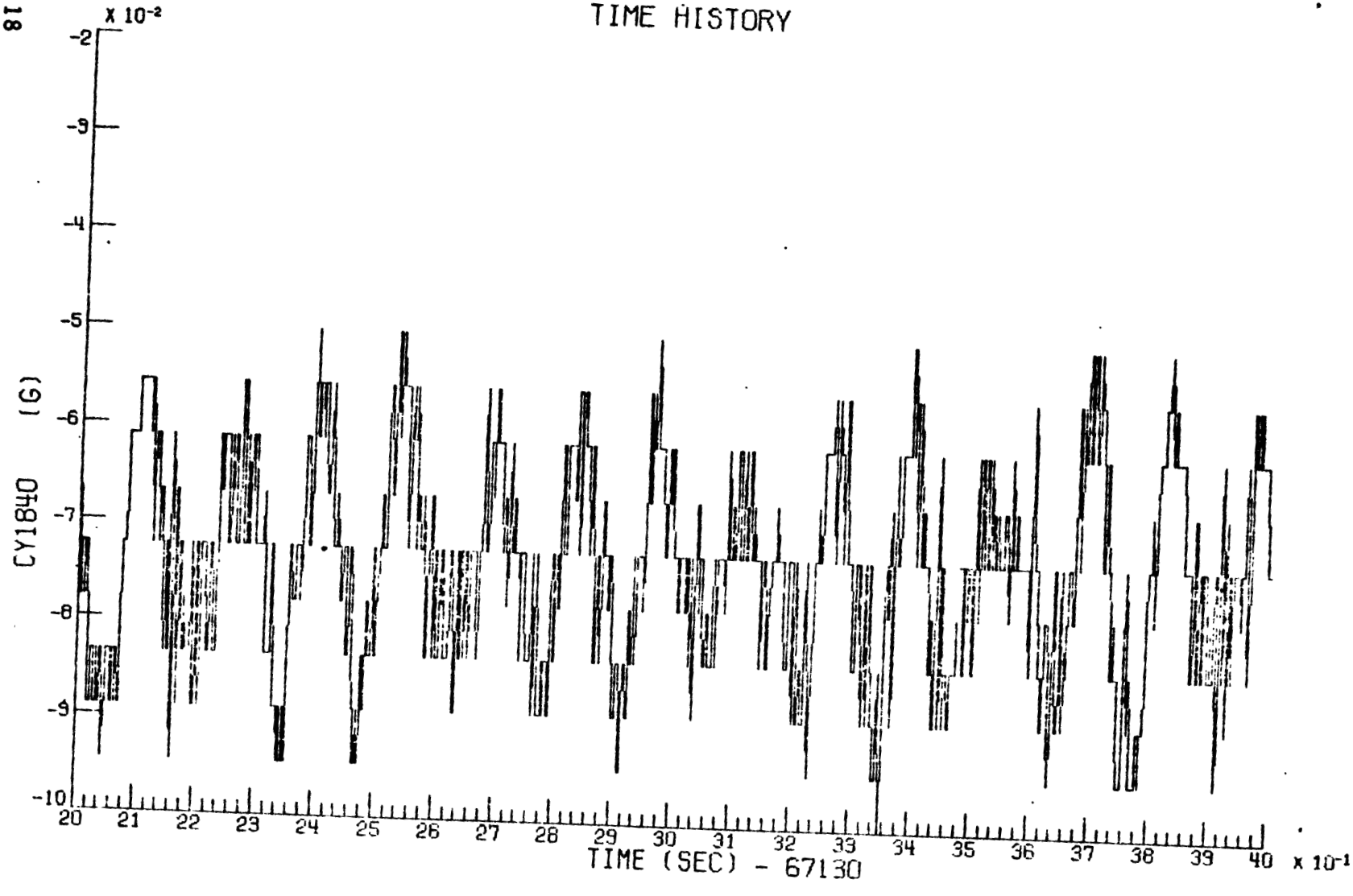
MEAN = -12318 x 10^{-5} σ^2 = 58948 x 10^{-6} σ = 24279 x 10^{-6} 3σ = 72838 x 10^{-6}

VIKING B FLT (CIF) PRE-IGNITION CY1830

1024 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.7b



MAX = -.050

MIN = -.100

VIKING B FLT (CIF)

PRE-IGNITION

1024 SPS

09/22/75

CY1840

Figure 4.8a

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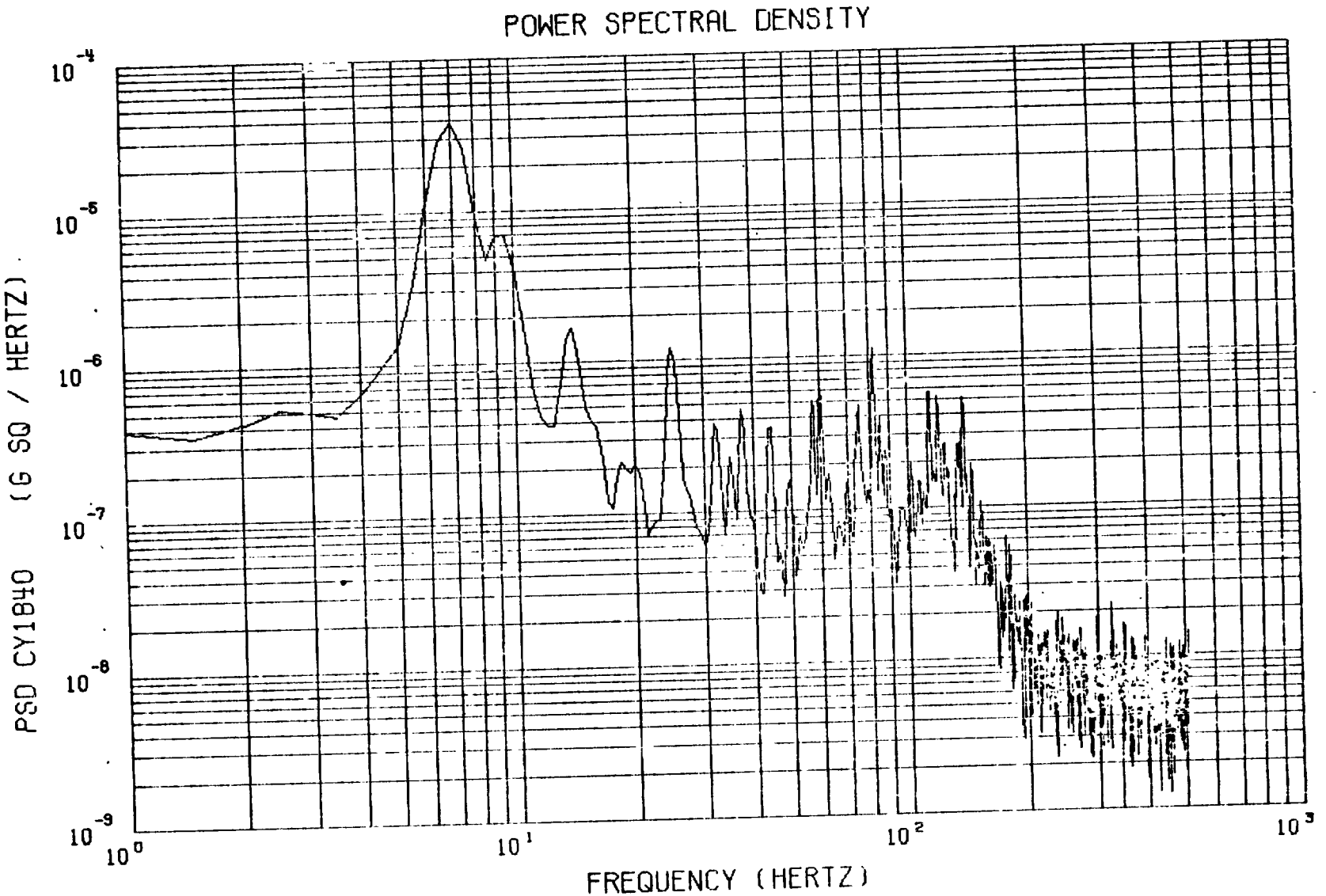


ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

MEAN = -72948 x 10^{-6} σ^2 = 1051 x 10^{-7} σ = 10251 x 10^{-6} 3σ = 30755 x 10^{-6}

VIKING B FL. (CIF) PRE-IGNITION CY1840

1024 SPS

Figure 4.8b

NASA-LANGLEY SPECTRAL ANALYSIS PROGRAM 09/22/75

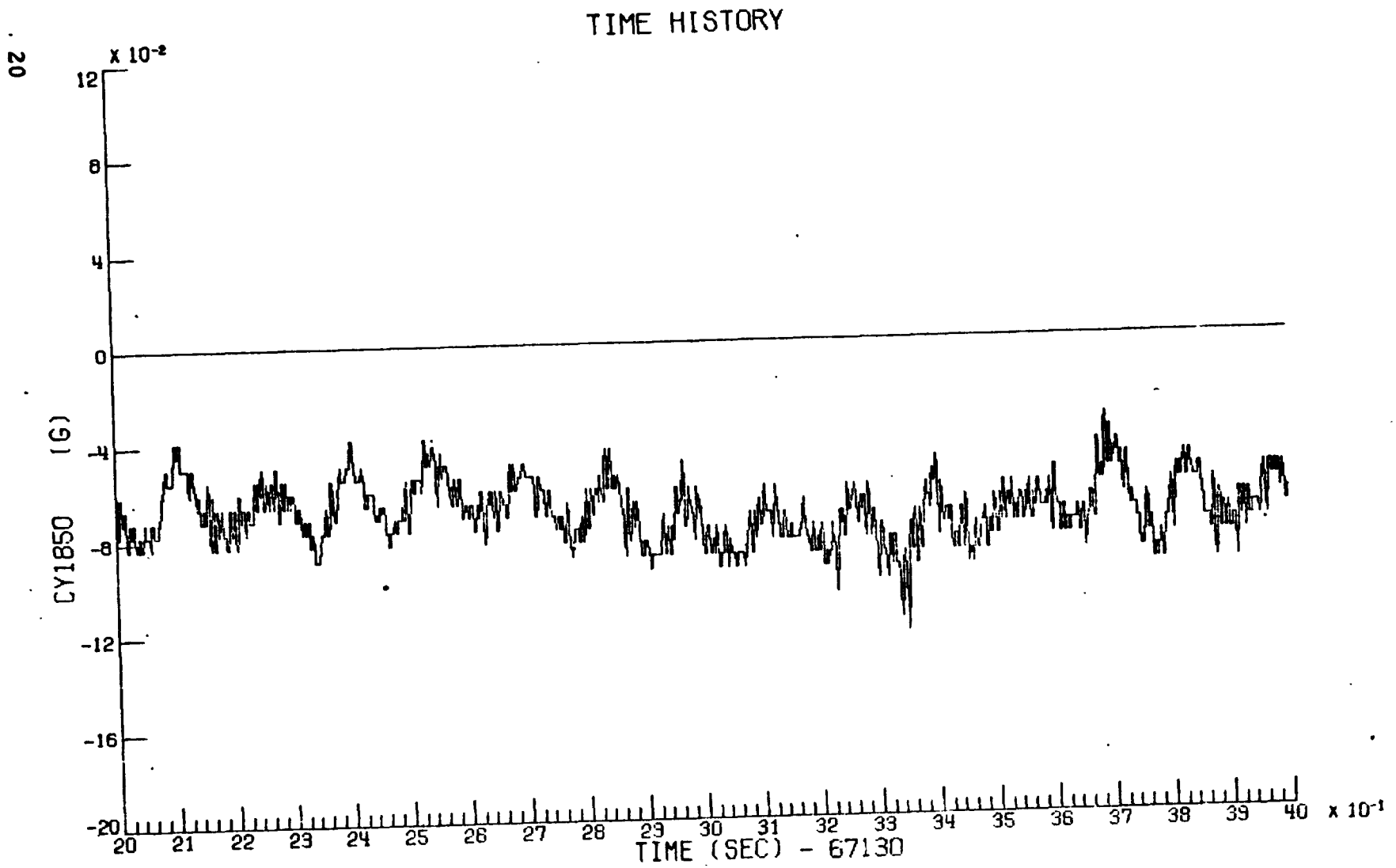
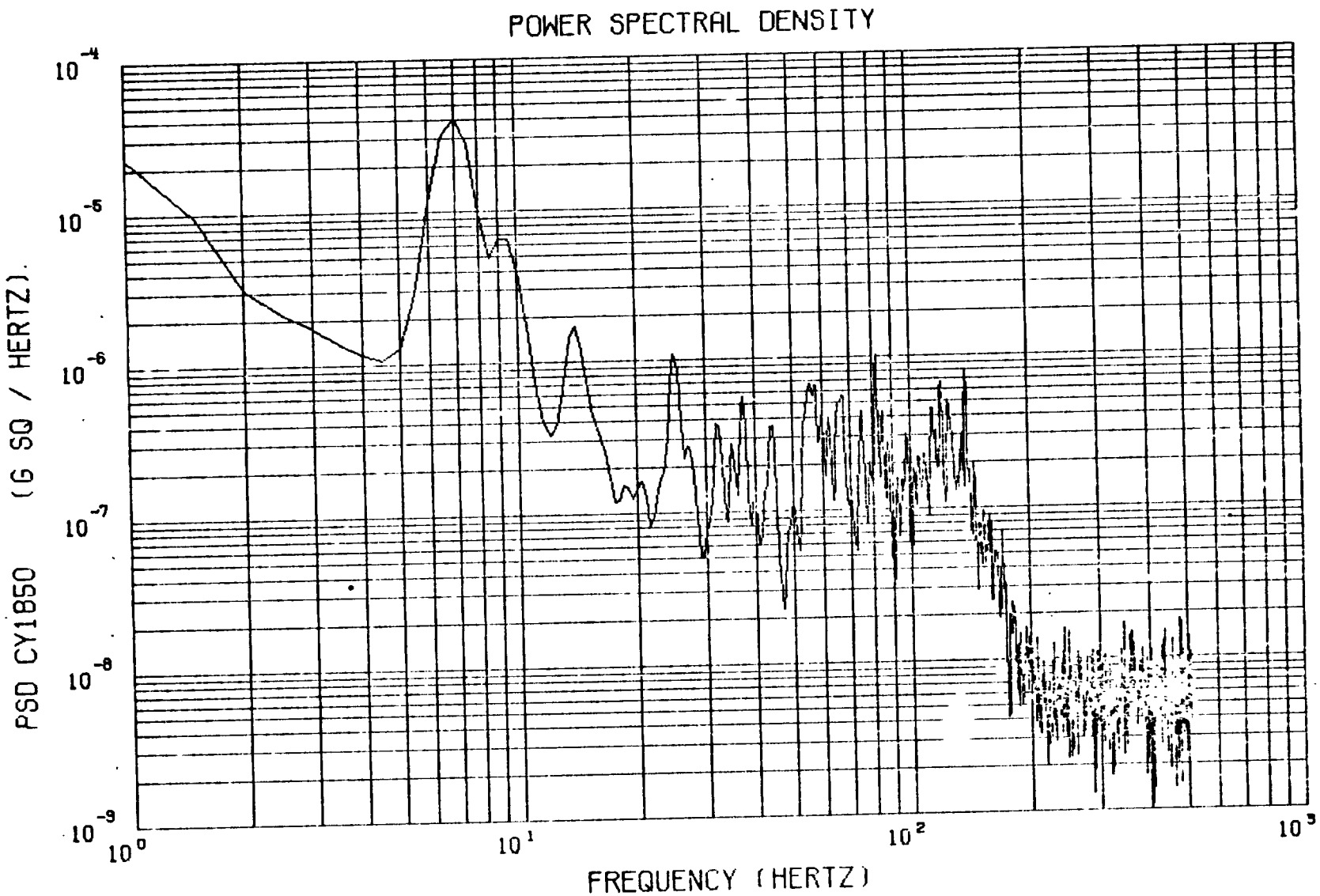

TIME HISTORY
20
x 10⁻²
12
8
4
0
-4
-8
-12
-16
-20
CY1850 (G)
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 x 10⁻¹
TIME (SEC) - 67130
MAX = -.033
MIN = -.122
VIKING B FLT (CIF)
PRE-IGNITION
1024 SPS
CY1650
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.9a



ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

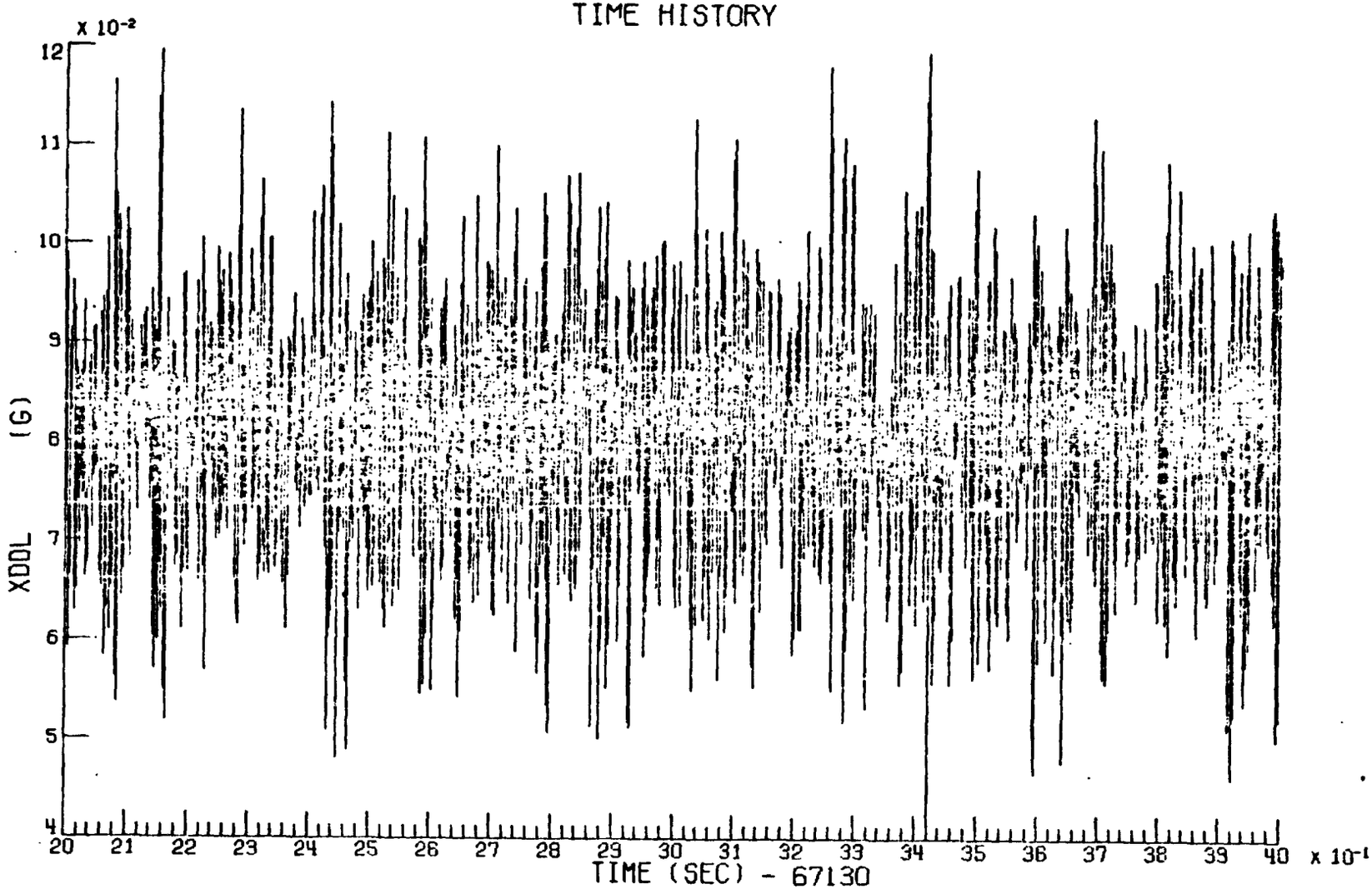
MEAN = -71377 x 10^{-6} σ^2 = 16921 x 10^{-6} σ = 12618 x 10^{-6} 3σ = 37854 x 10^{-6}

VIKING B FLT (CIF) PRE-IGNITION CY1650

1024 SPS

NASA-LANGLEY STRUCTURAL ANALYSIS PROGRAM 09/22/75

Figure 4.9b



MAX = .119 MIN = .040

VIKING B FLT (CIF) PRE-IGNITION XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.10a

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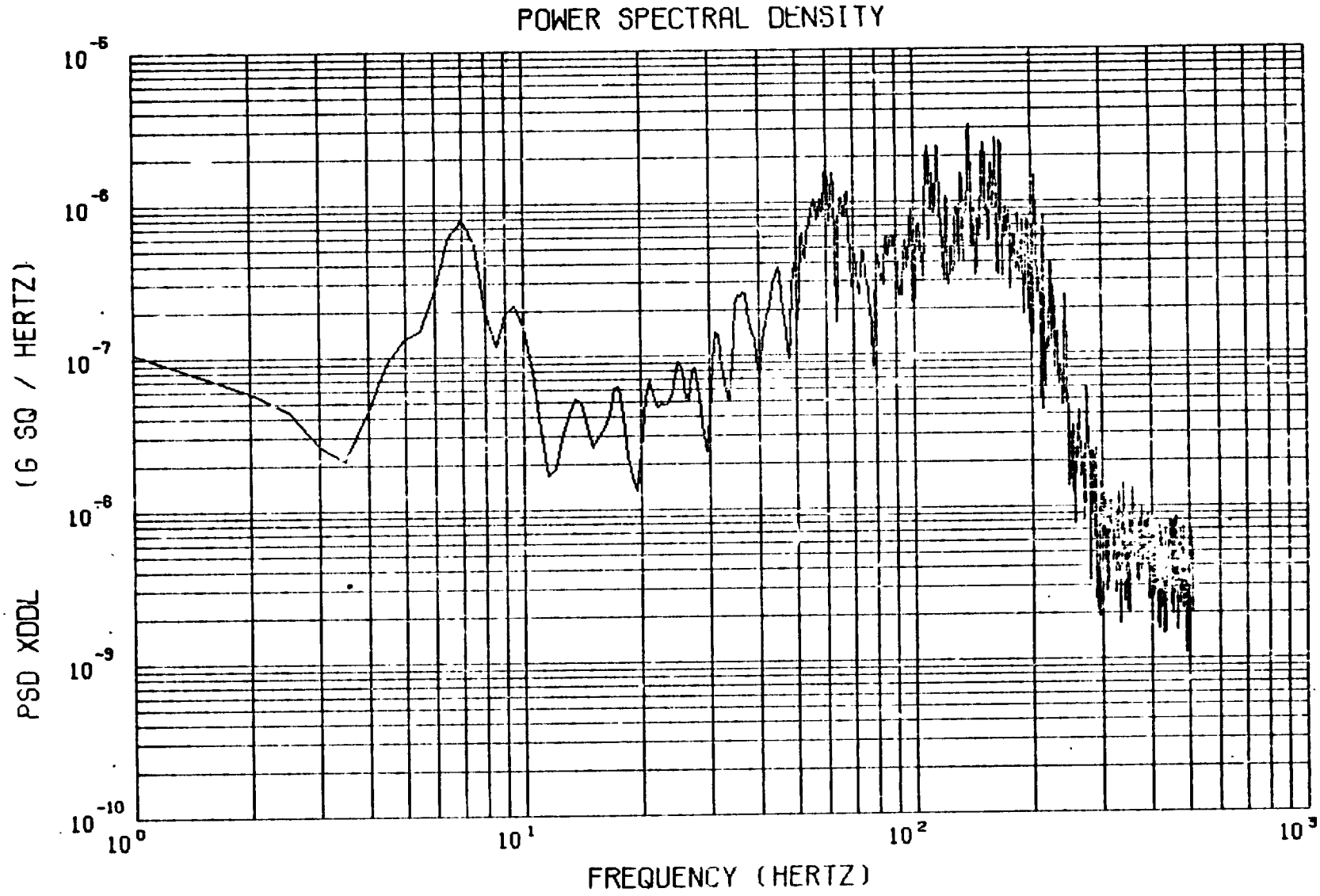

ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

MEAN = 81521 x 10^{-6} σ^2 = 13214 x 10^{-6} σ = 11496 x 10^{-6} 3σ = 34488 x 10^{-6}

VIKING B FLT (CIF) PRE-IGNITION XDDL

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Figure 4.10b

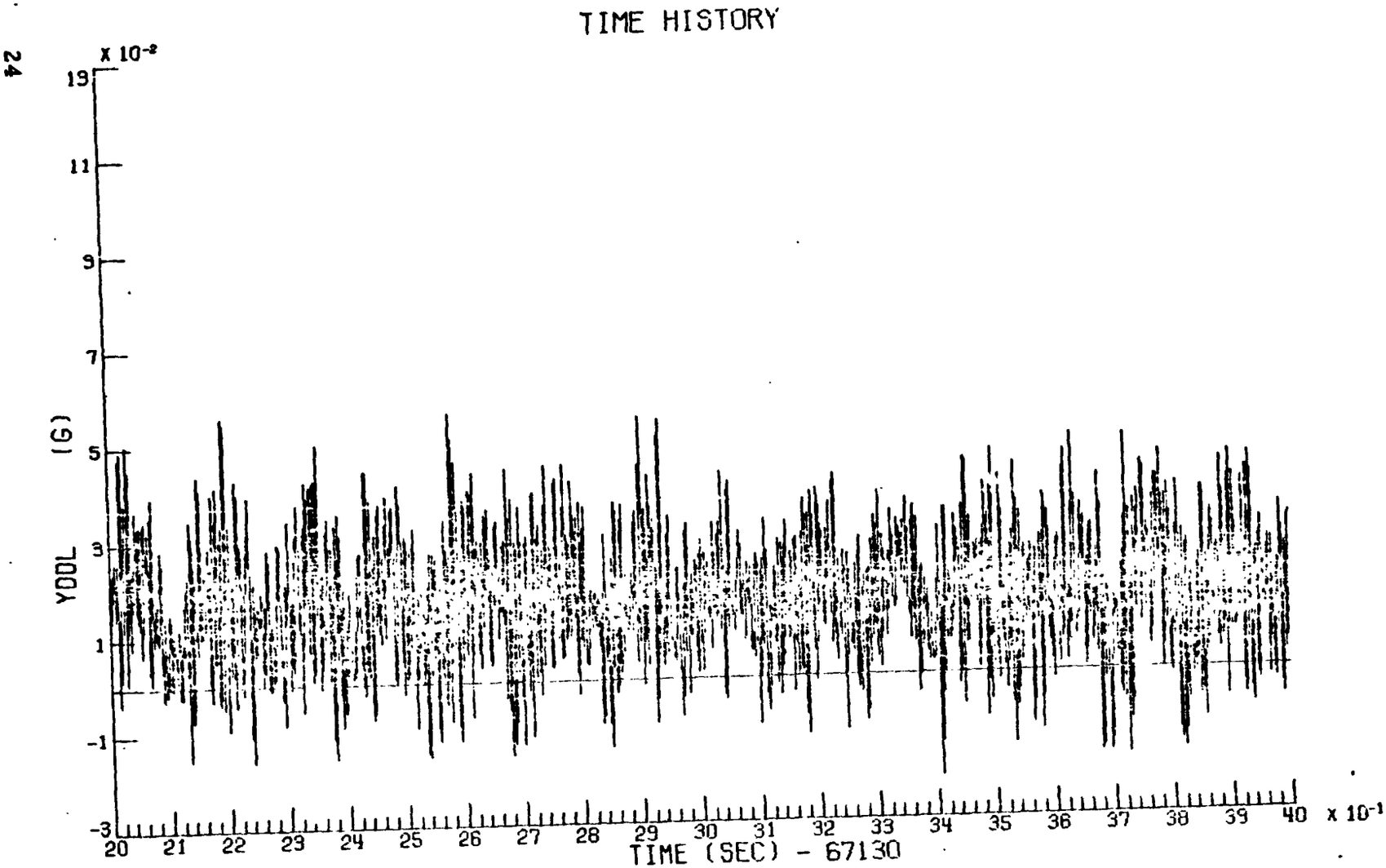
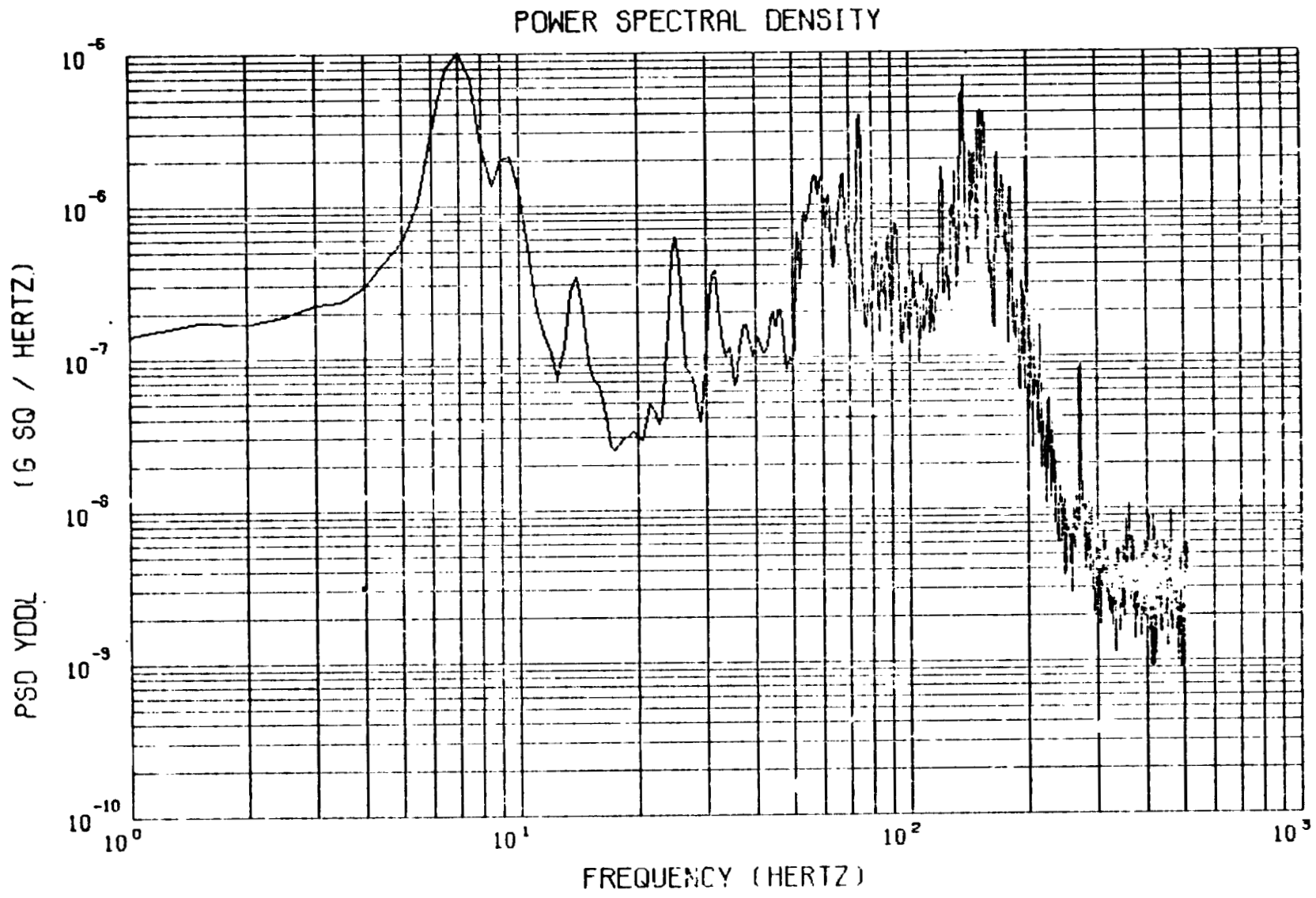

TIME HISTORY
24
X 10⁻²
19
11
9
7
5
3
1
-1
-3
YDDL (G)
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 X 10⁻¹
TIME (SEC) - 67130
MAX = .056
MIN = -.021
VIKING B FLT (CIF)
PRE-IGNITION
YDDL
NASA LANGLEY STRUCTURAL ANALYSIS PROGRAM 09/23/75

Figure 4.11a



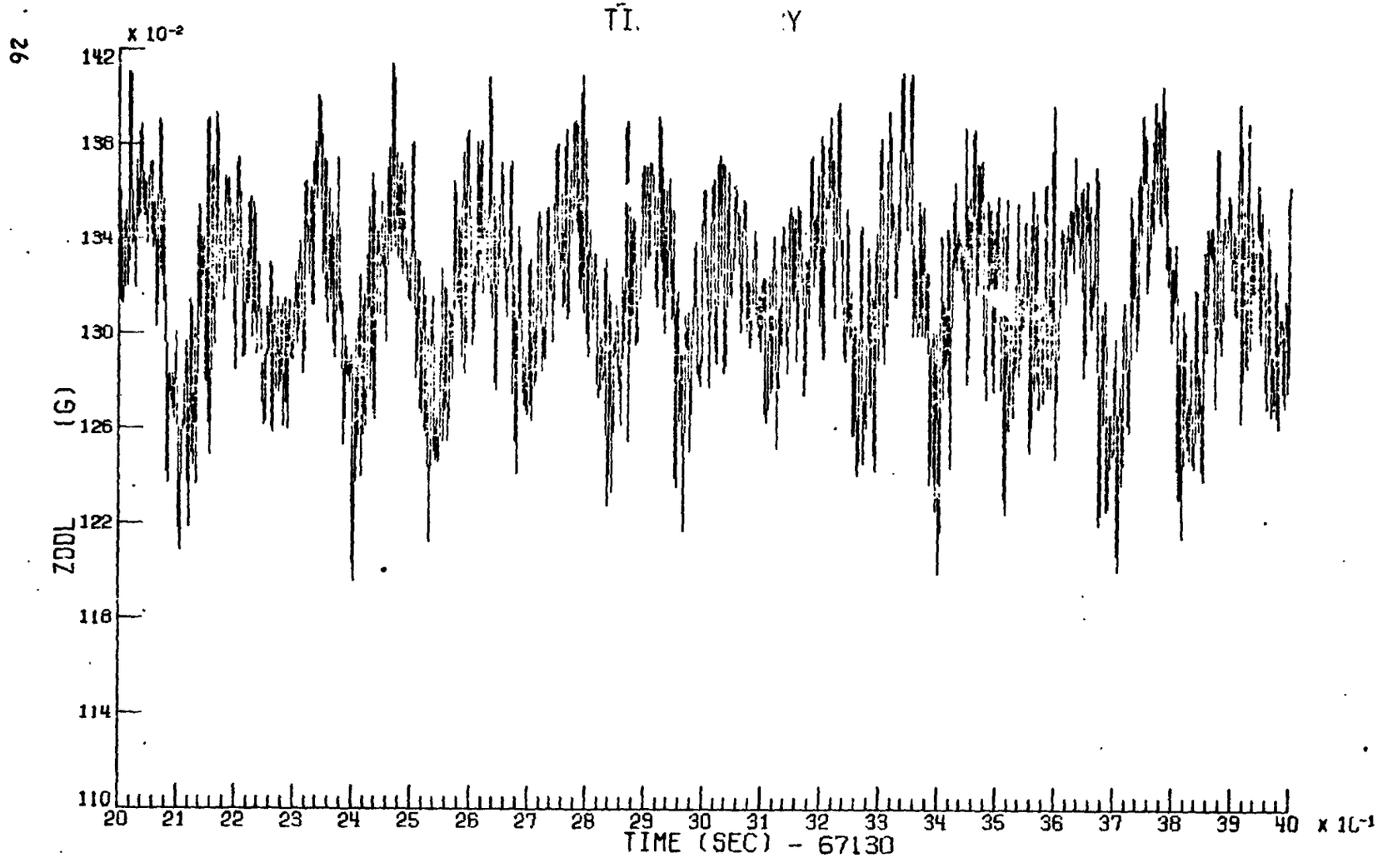
ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

MEAN = 16224 x 10^{-5} σ^2 = 15626 x 10^{-8} σ = 125 x 10^{-4} 3σ = 37502 x 10^{-5}

VIKING B FLT (CIF) PRE-IGNITION . YDDL

NASA LANGLEY SIGNAL ANALYSIS PROGRAM 09/27/75

Figure 4.11b

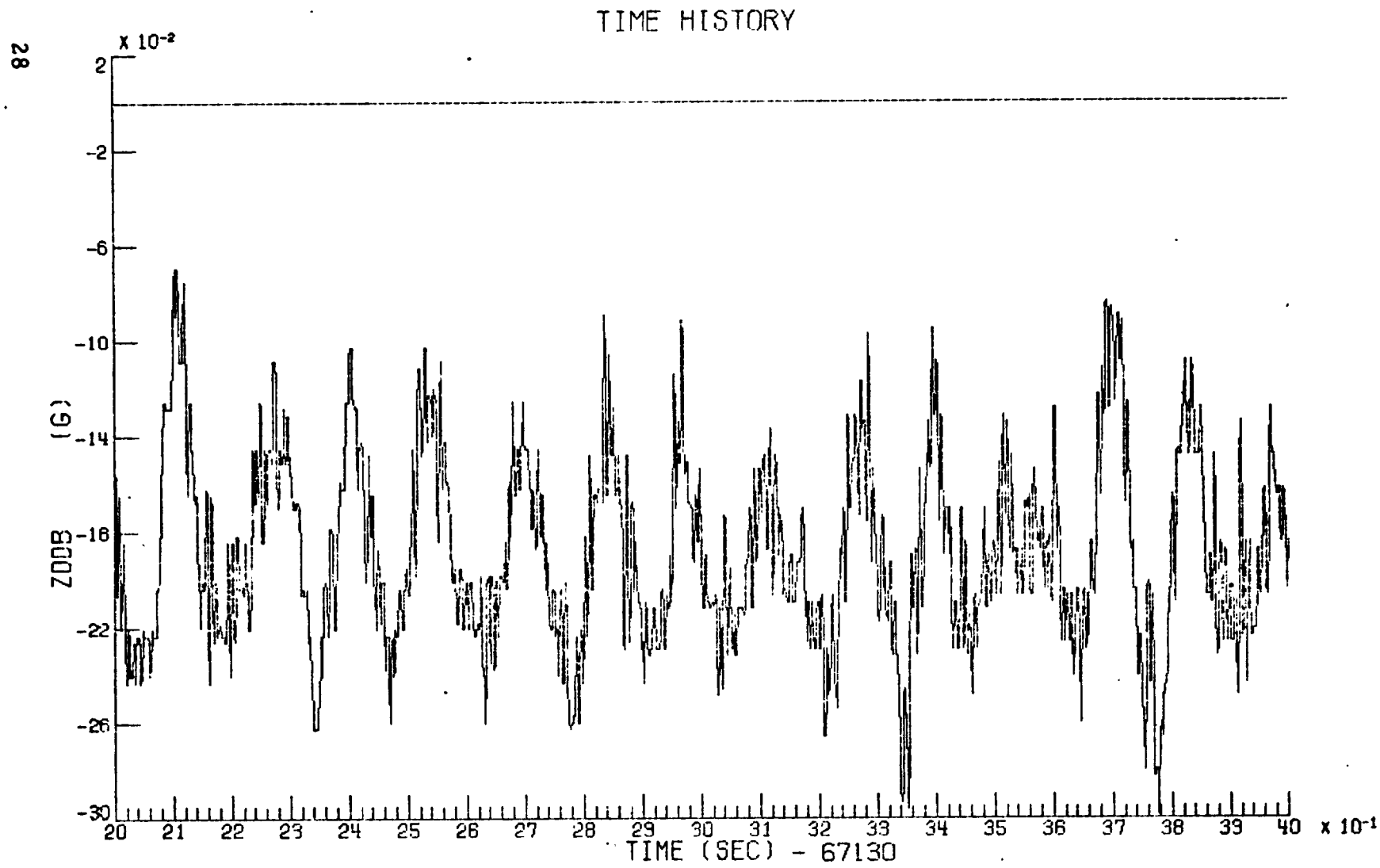


MAX = 1.414 MIN = 1.195

VIKING B FLT (CIF) PRE-IGNITION ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.12a

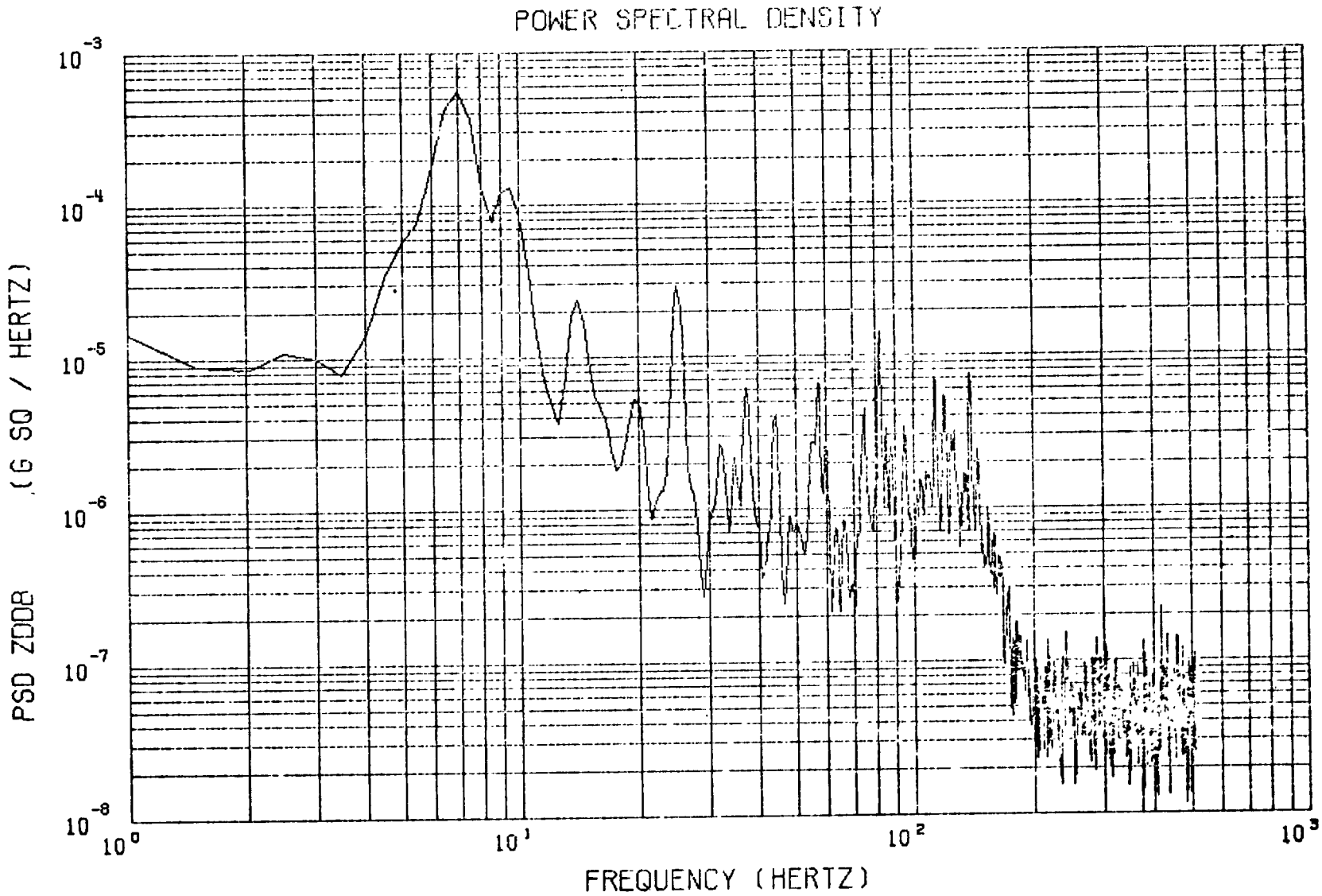


MAX = -.069 MIN = -.299

VIKING B FLT (CIF) PRE-IGNITION ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.13a



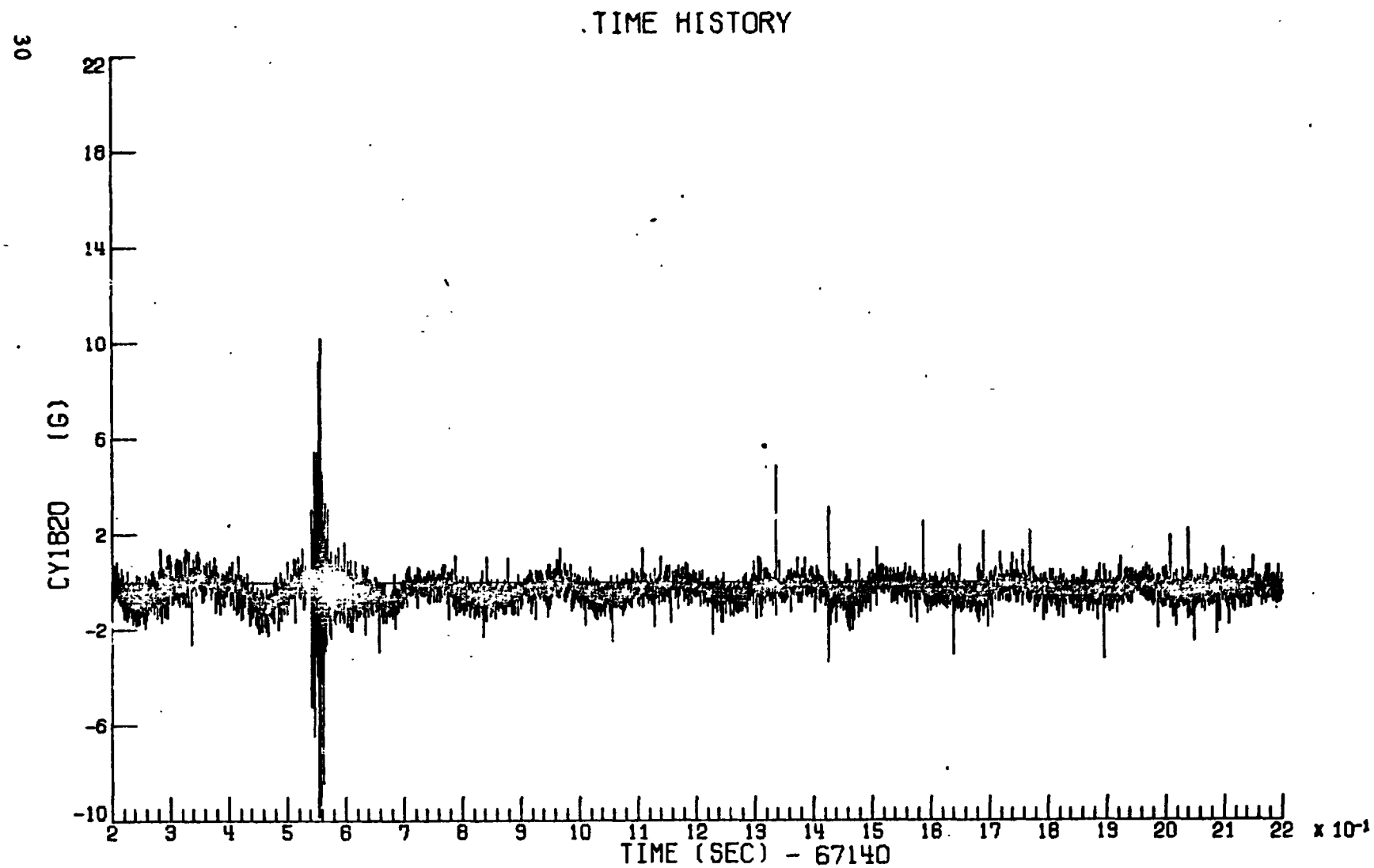
ΔF = .500 START = 67132.000 SEC STOP = 67134.000 SEC

MEAN = -188 x 10^{-3} σ^2 = 15466 x 10^{-7} σ = 39327 x 10^{-6} 3σ = 11798 x 10^{-5}

VIKING B FLT (CIF) PRE-IGNITION ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.13b

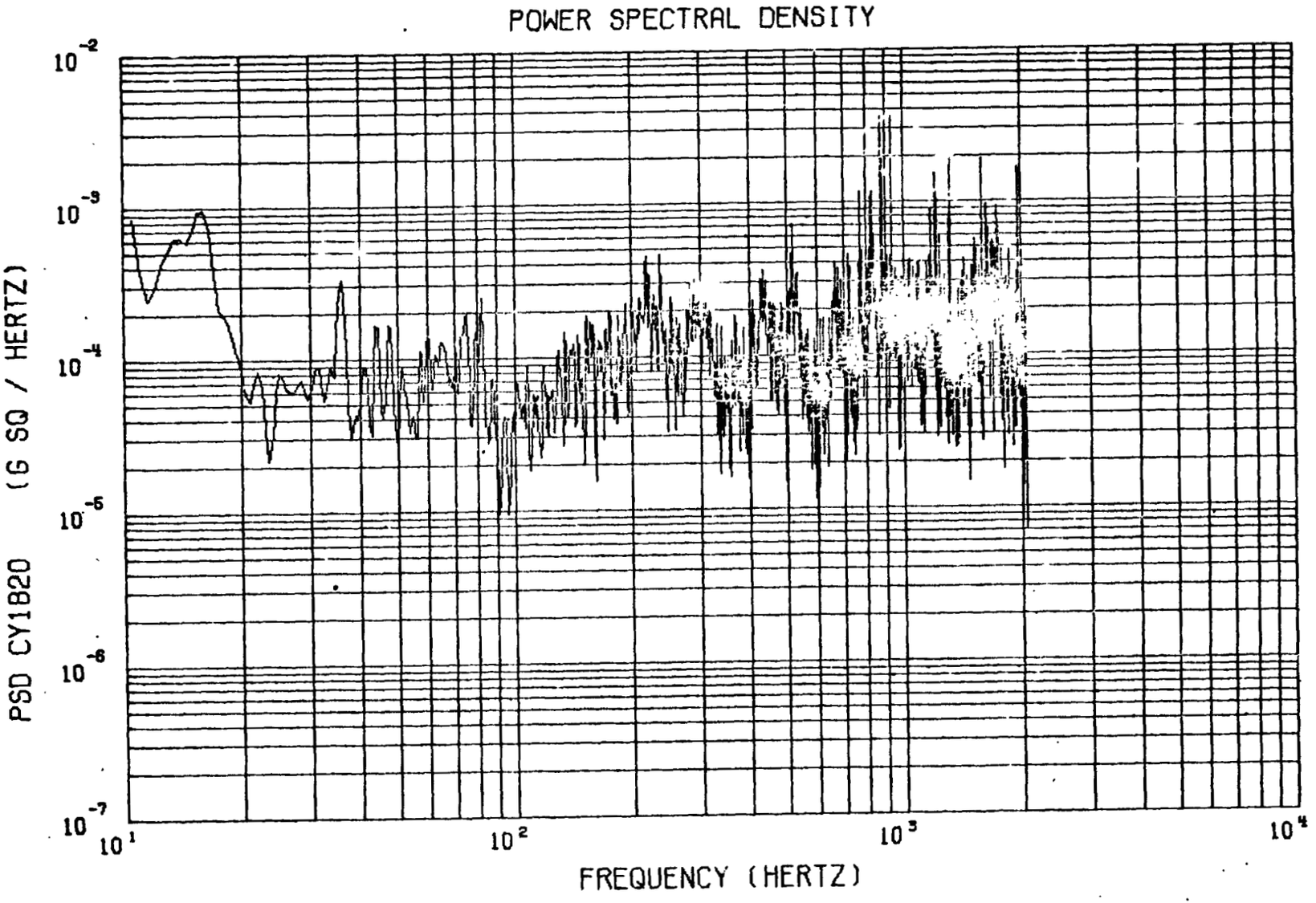


MAX = 10.205 MIN = -9.838

VIKING B FLT (CIF) STAGE 0 IGN -/1 CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75 4096 SPS

Figure 4.14a



ΔF = .499 START = 67140.200 SEC STOP = 67142.200 SEC

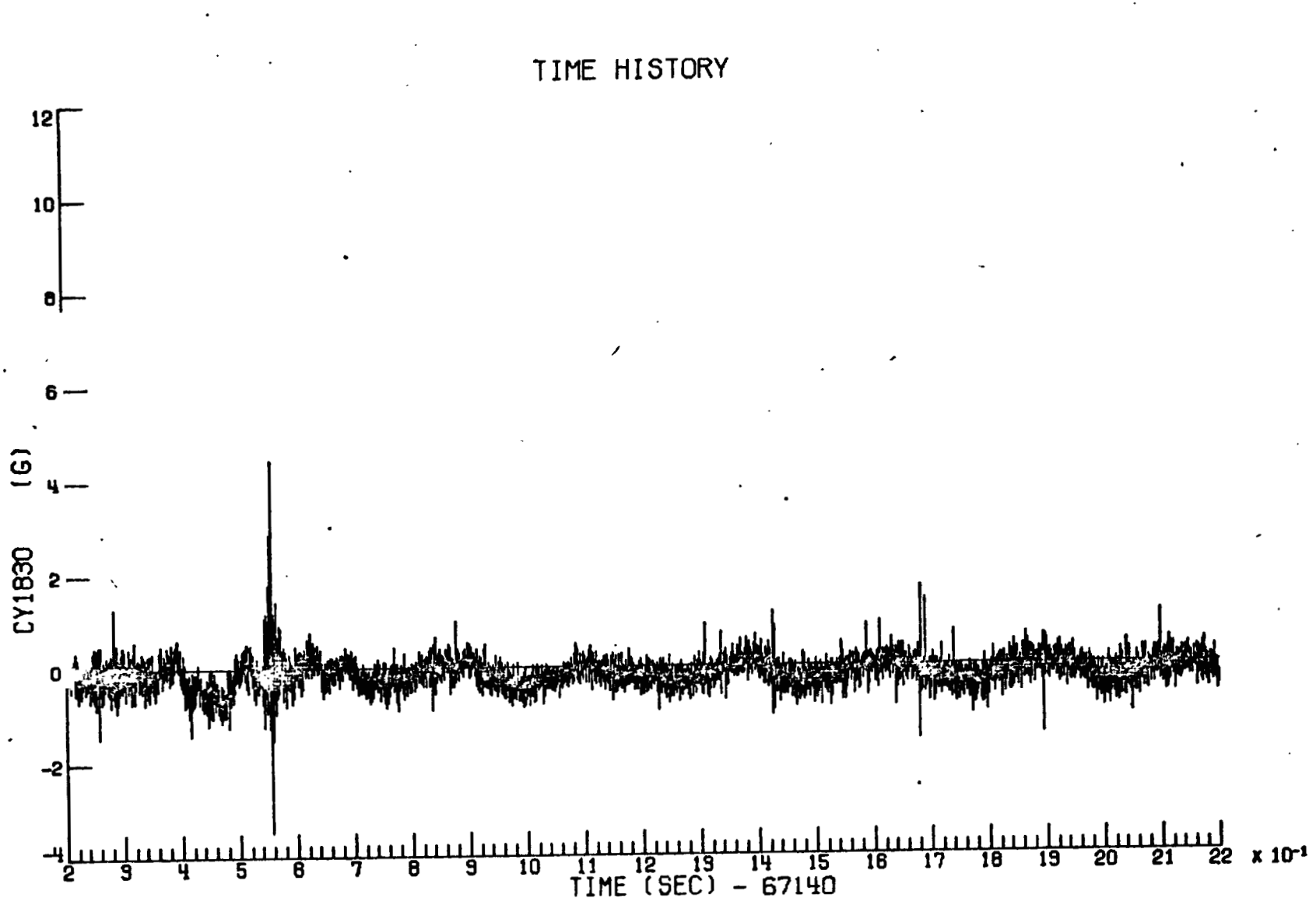
MEAN = -34551 x 10^{-6} σ^2 = 39573 x 10^{-5} σ = 62907 x 10^{-6} 3σ = 18872 x 10^{-6}

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.14b



MAX = 4.432

MIN = -3.484

VIKING B FLT (CIF)

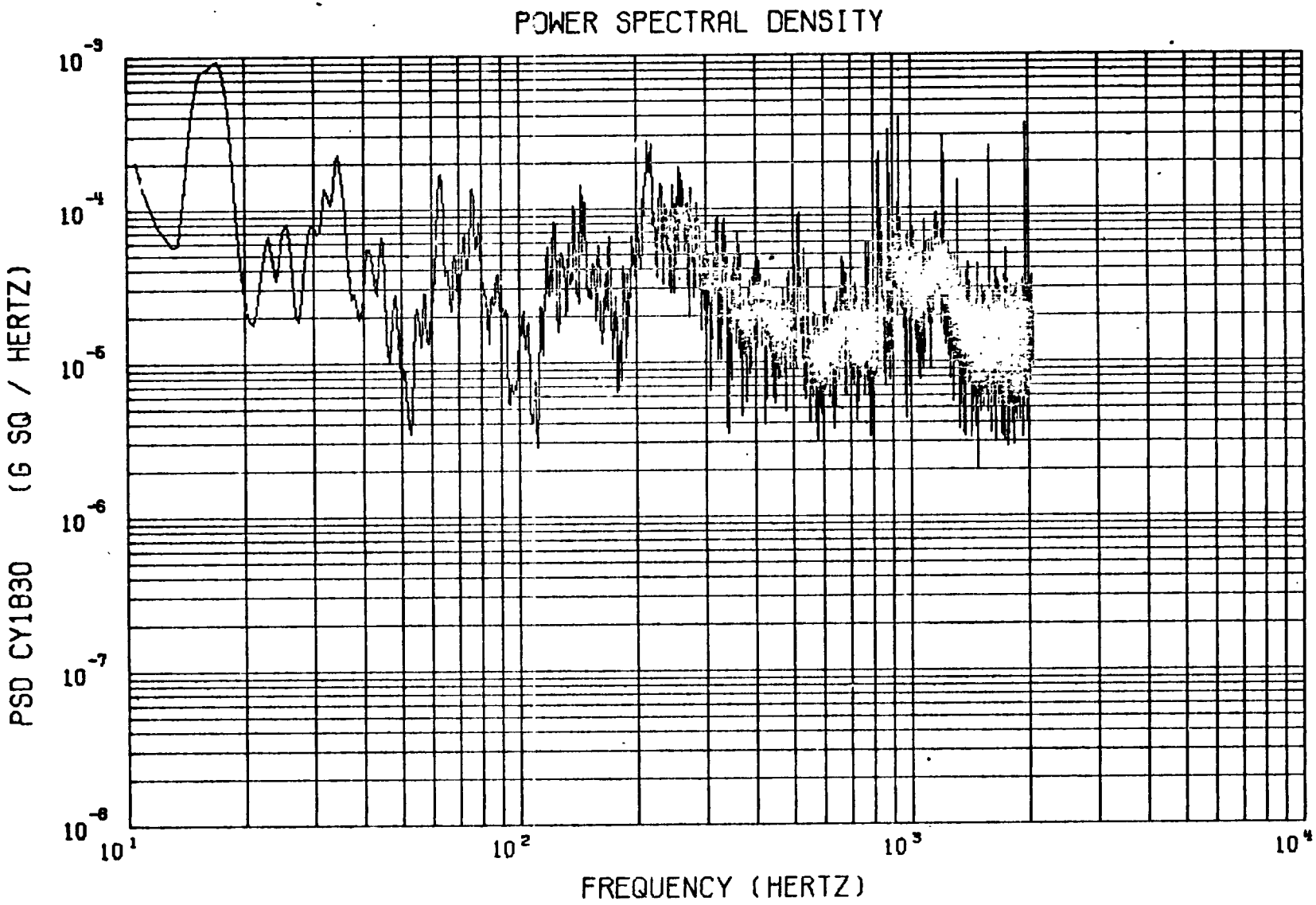
STAGE 0 IGN - 1

4096 SPS

CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.15a



ΔF = .499 START = 67140.200 SEC STOP = 67142.200 SEC

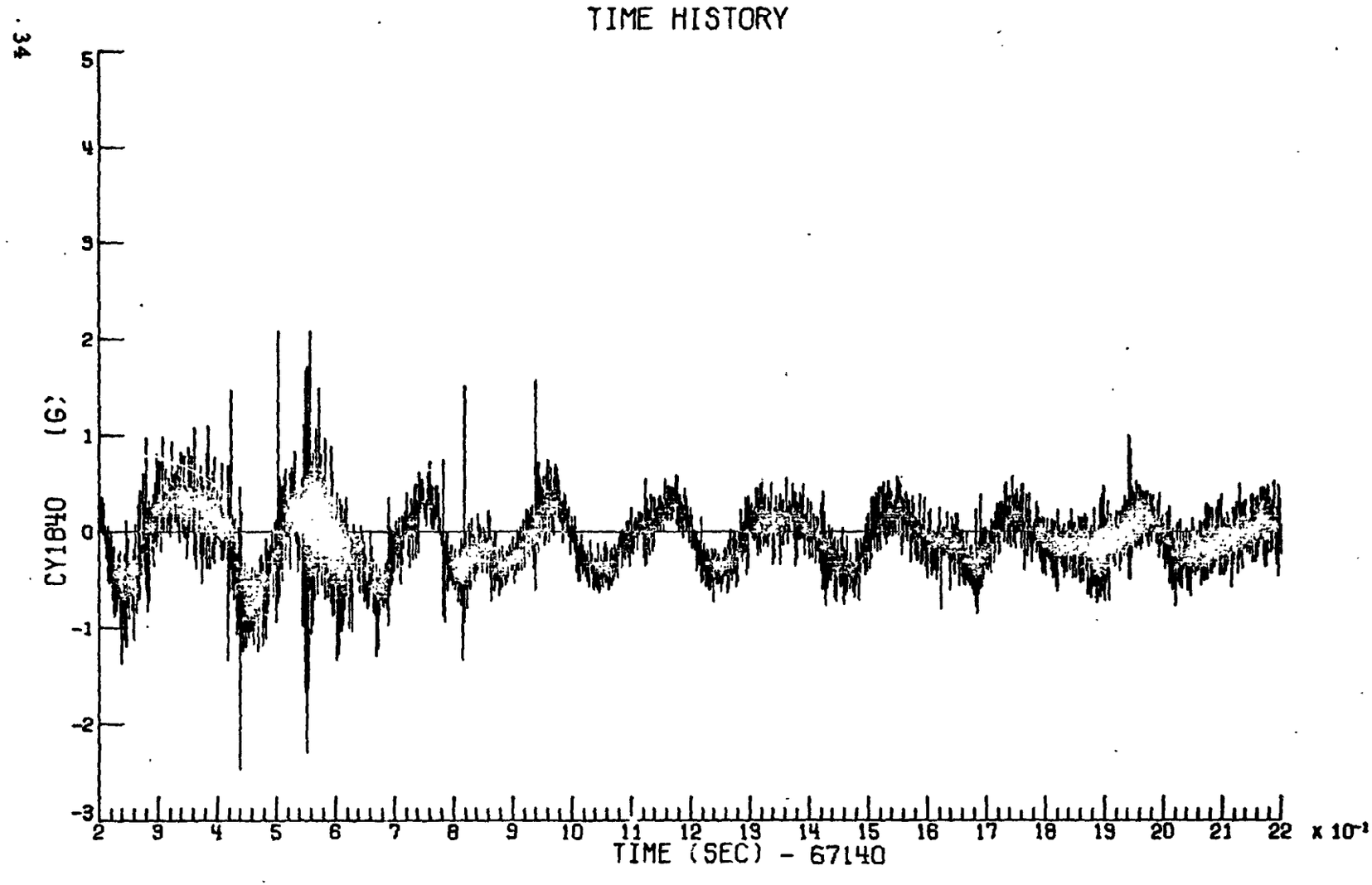
MEAN = -14679 x 10^{-5} σ^2 = 8236 x 10^{-5} σ = 28698 x 10^{-5} 3σ = 86095 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.15b



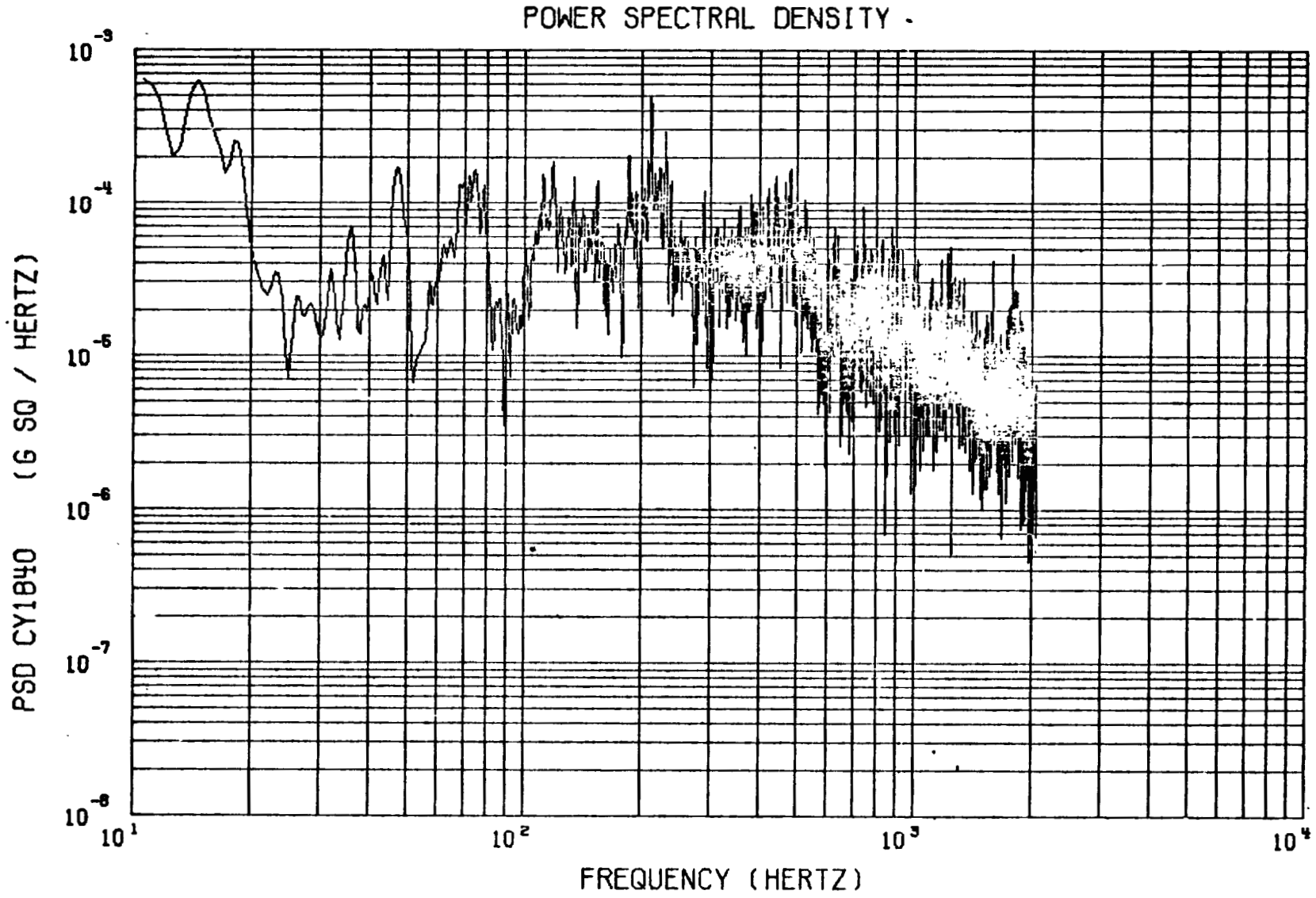
MAX = 2.079 MIN = -2.468

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.16a



ΔF = .499 START = 67140.200 SEC STOP = 67142.200 SEC

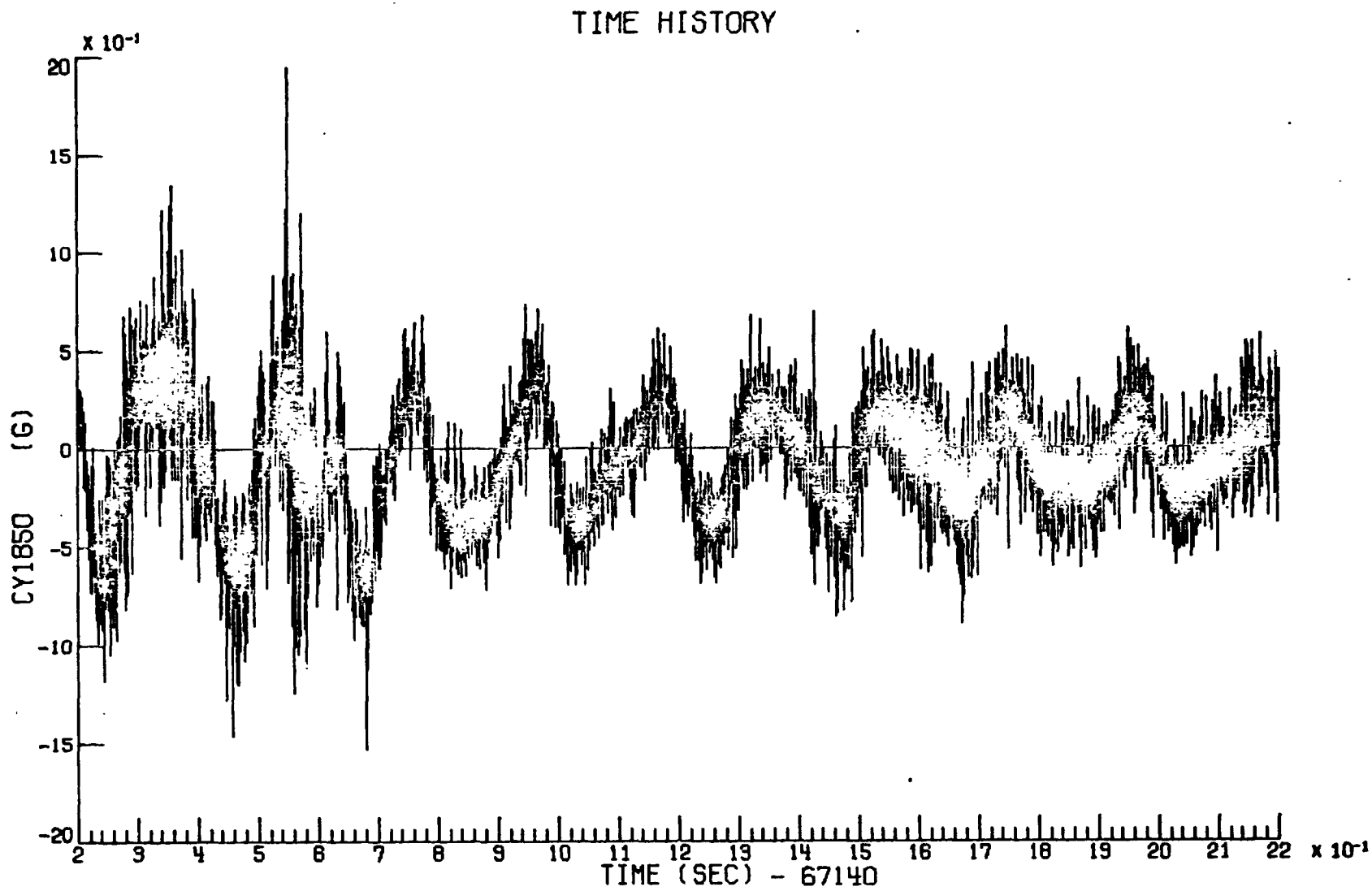
MEAN = -86902 x 10^{-5} σ^2 = 10865 x 10^{-5} σ = 32963 x 10^{-5} 3σ = 98889 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.16b



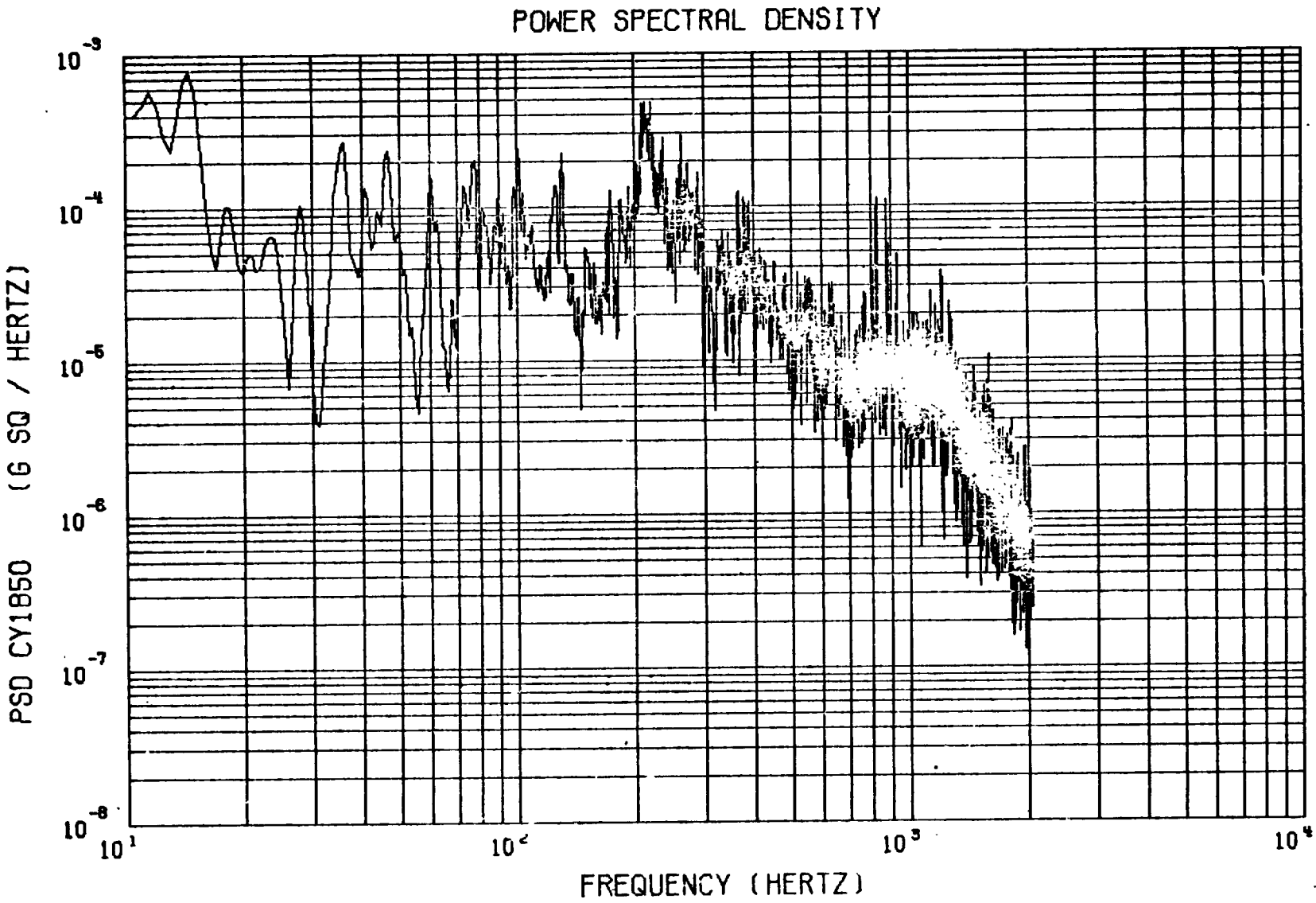
MAX = 1.946 MIN = -1.529

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.17a



ΔF = .499 START = 67140.200 SEC STOP = 67142.200 SEC

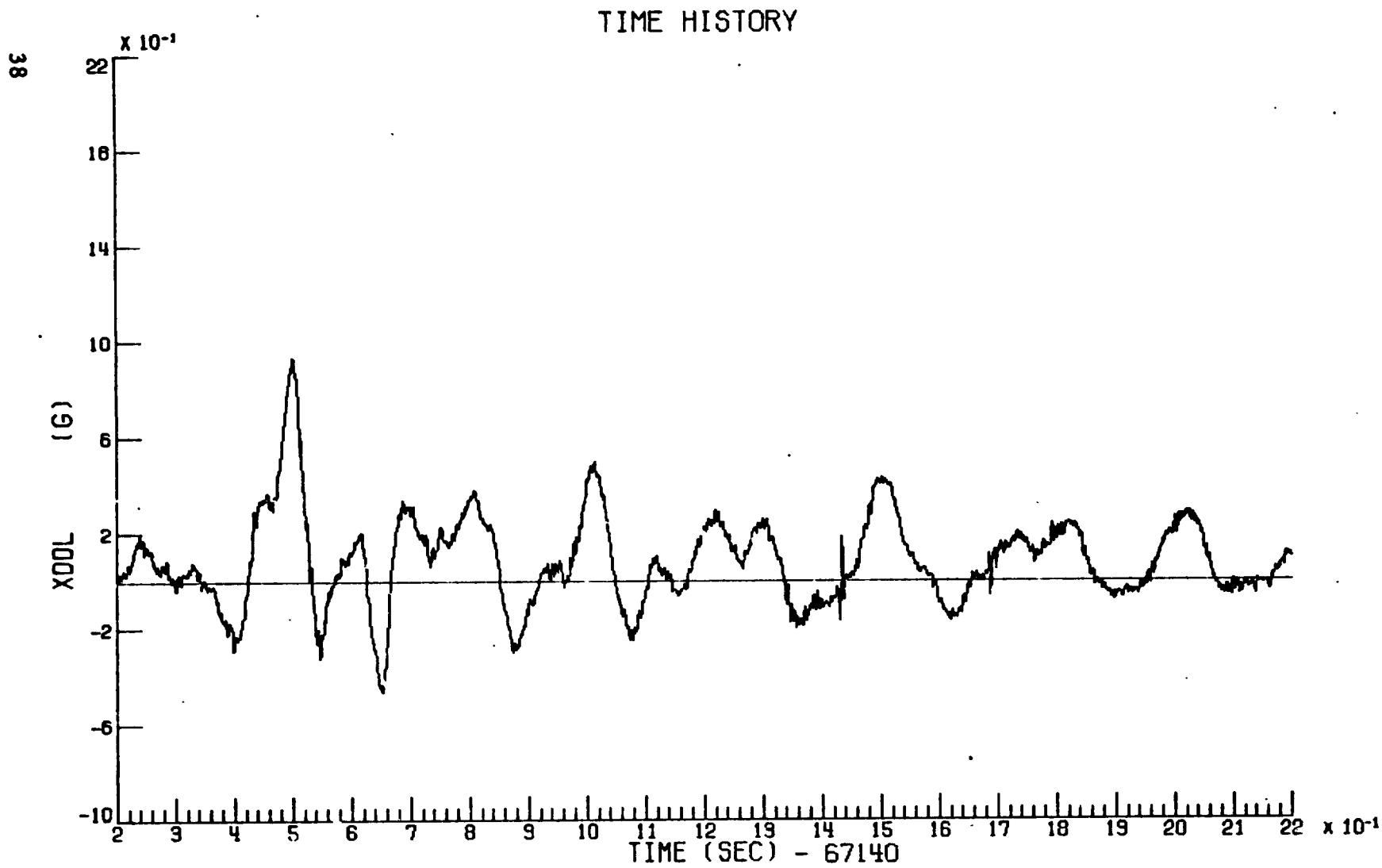
MEAN = -83729 x 10^{-8} σ^2 = 10174 x 10^{-5} σ = 31897 x 10^{-8} 3σ = 95693 x 10^{-8}

VIKING B FLT (CIF) STAGE 0 IGN - 1 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.17b

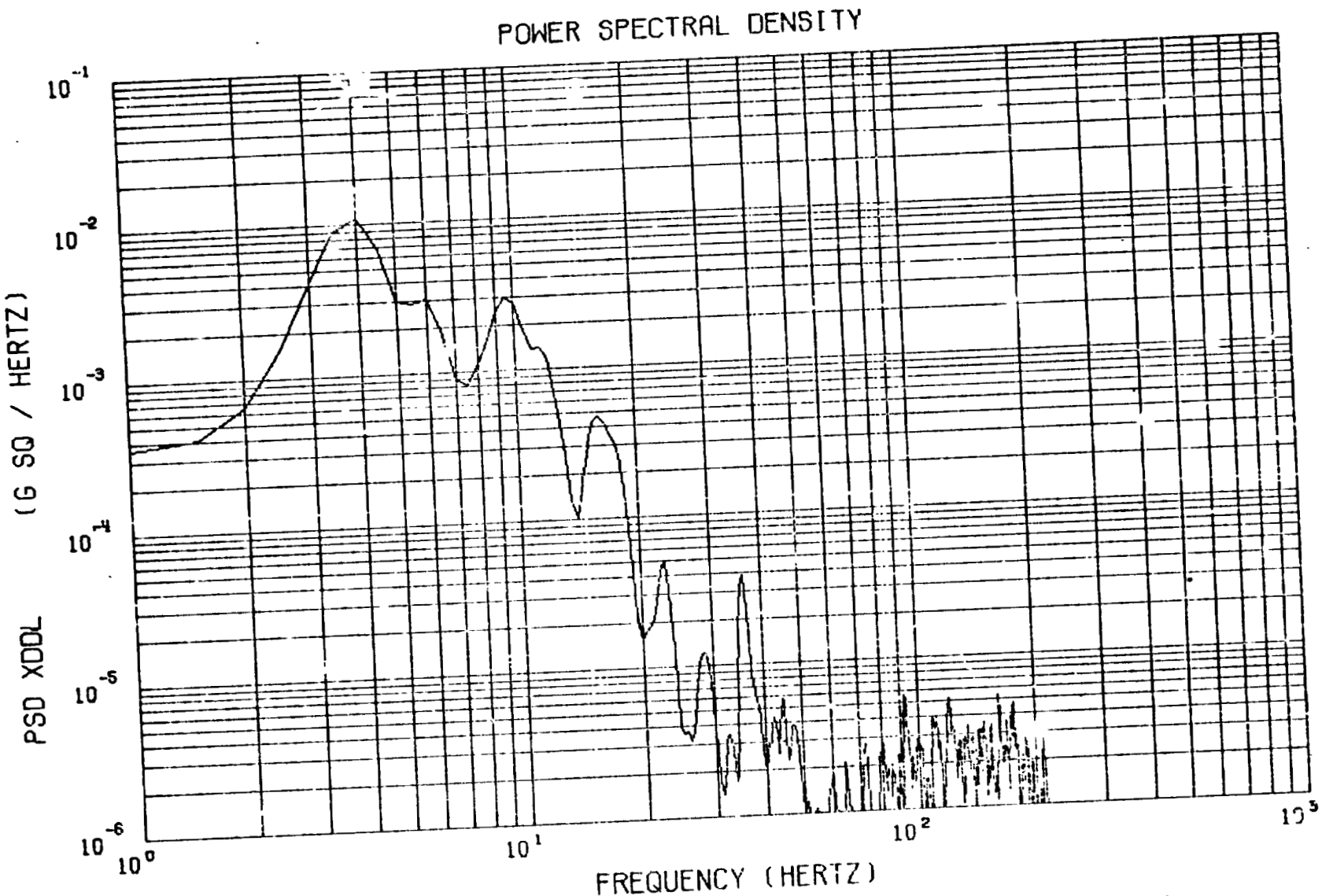


MAX = .932 MIN = -.466

VIKING B FLT (CIF) STAGE 0 IGN - 1 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.18a



START = 67140.200 SEC STOP = 67142.200 SEC

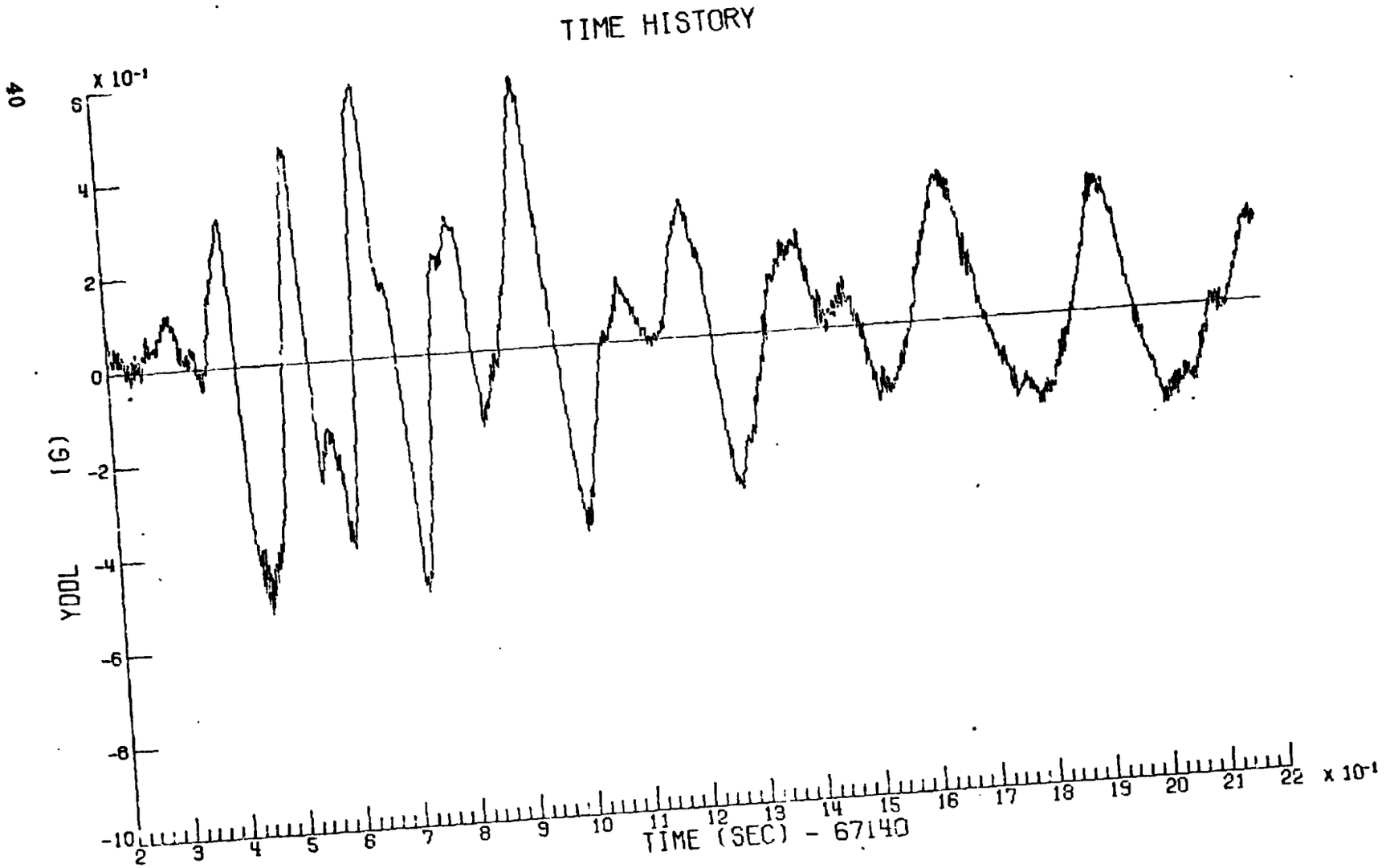
ΔF = .500

MEAN = 80091 x 10^{-6} σ^2 = 34701 x 10^{-6} σ = 18628 x 10^{-5} 3σ = 55885 x 10^{-5}

VIKING 8 FLT (CIF) STAGE 0 IGN - 1 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.18b



MAX = .587

MIN = -.530

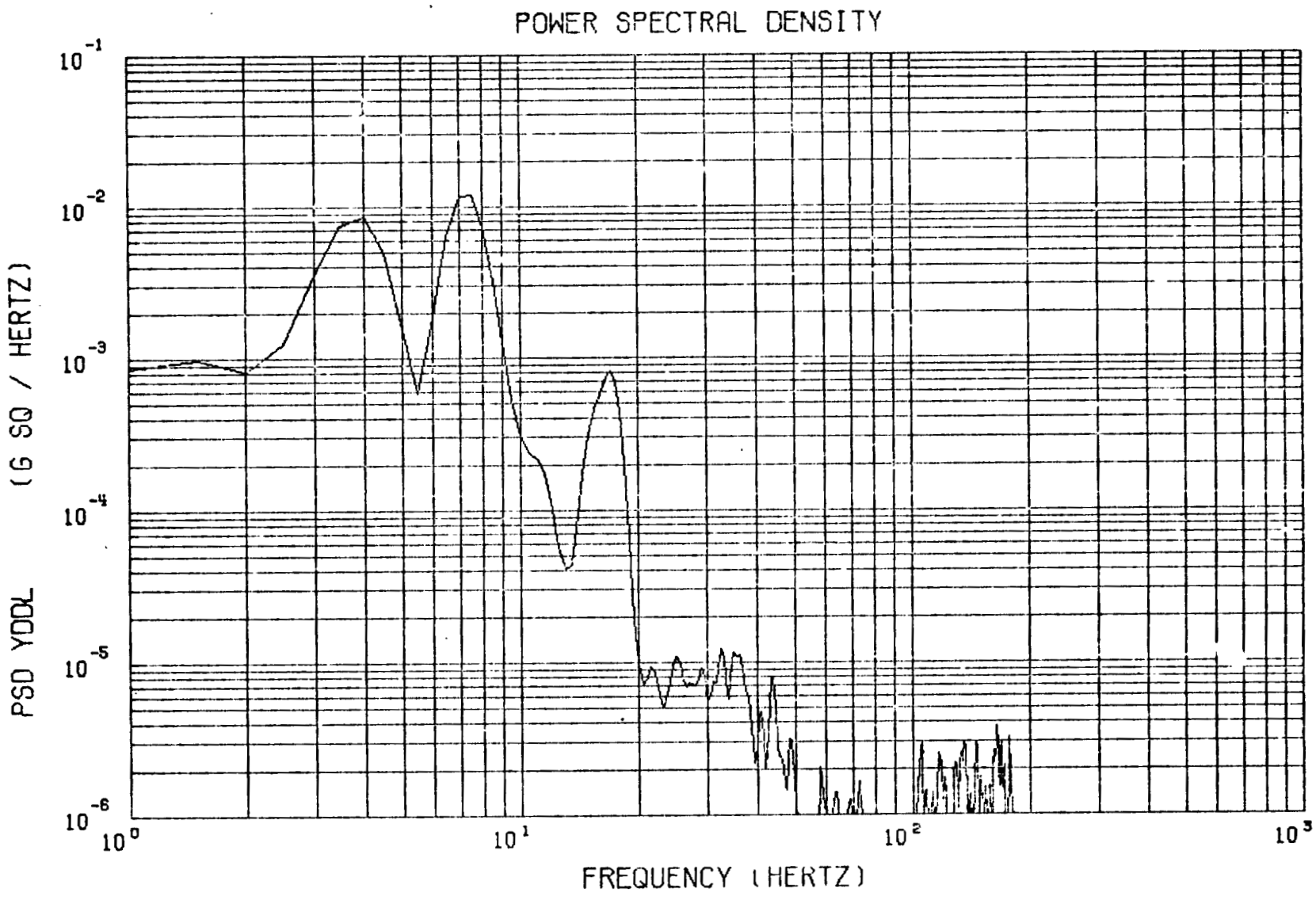
VIKING B FLT (CIF)

STAGE 0 IGN - 1

YDDL

NASA-LANGLEY STRUCTURAL ANALYSIS PROGRAM 09/23/75

Figure 4.19a



ΔF = .500 START = 67140.200 SEC STOP = 67142.200 SEC

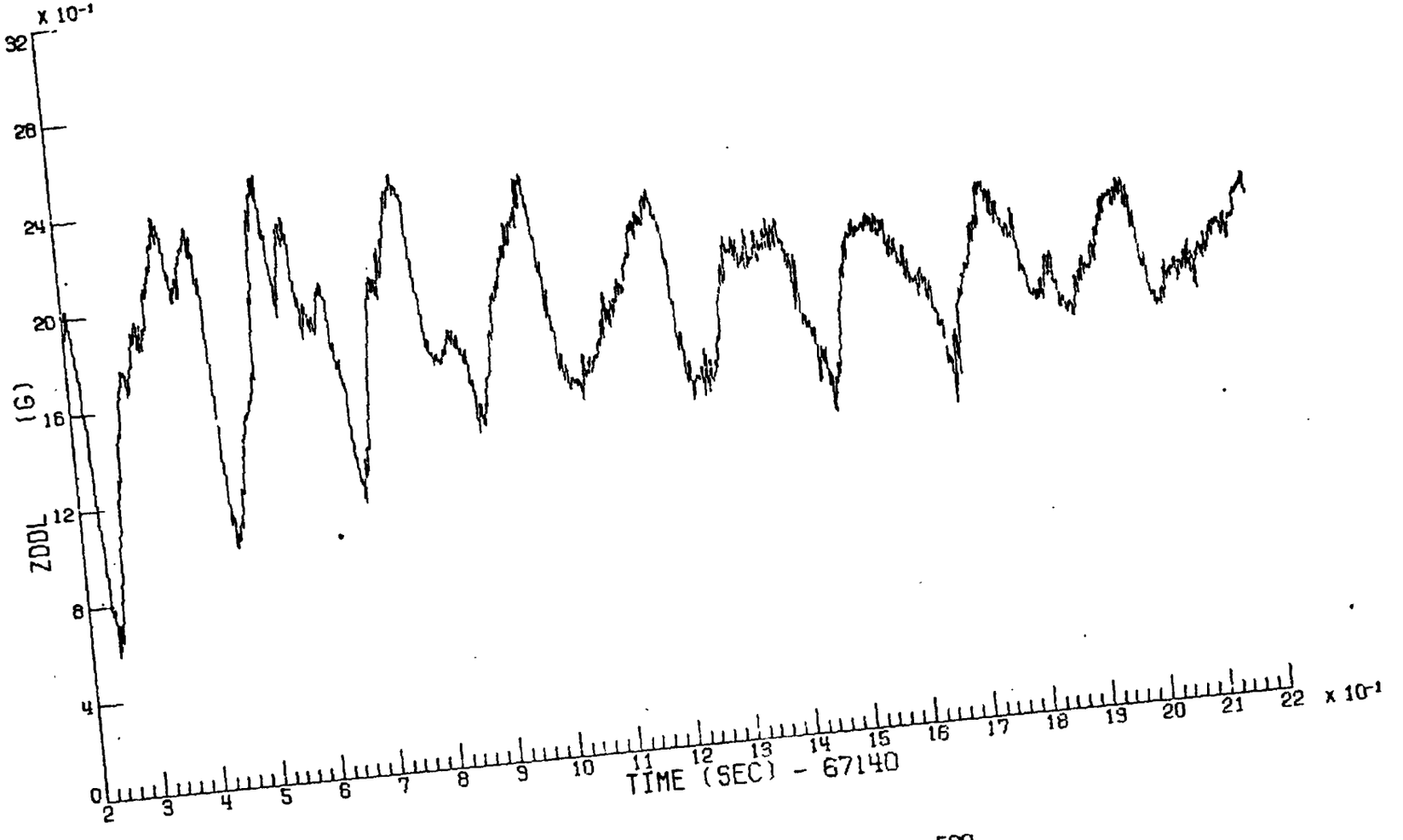
MEAN = 16168 x 10^{-6} σ^2 = 40978 x 10^{-6} σ = 20243 x 10^{-6} 3σ = 60729 x 10^{-6}

VIKING B FLT (CIF) STAGE O IGN - 1 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.19b

TIME HISTORY



MAX = 2.524

MIN = .592

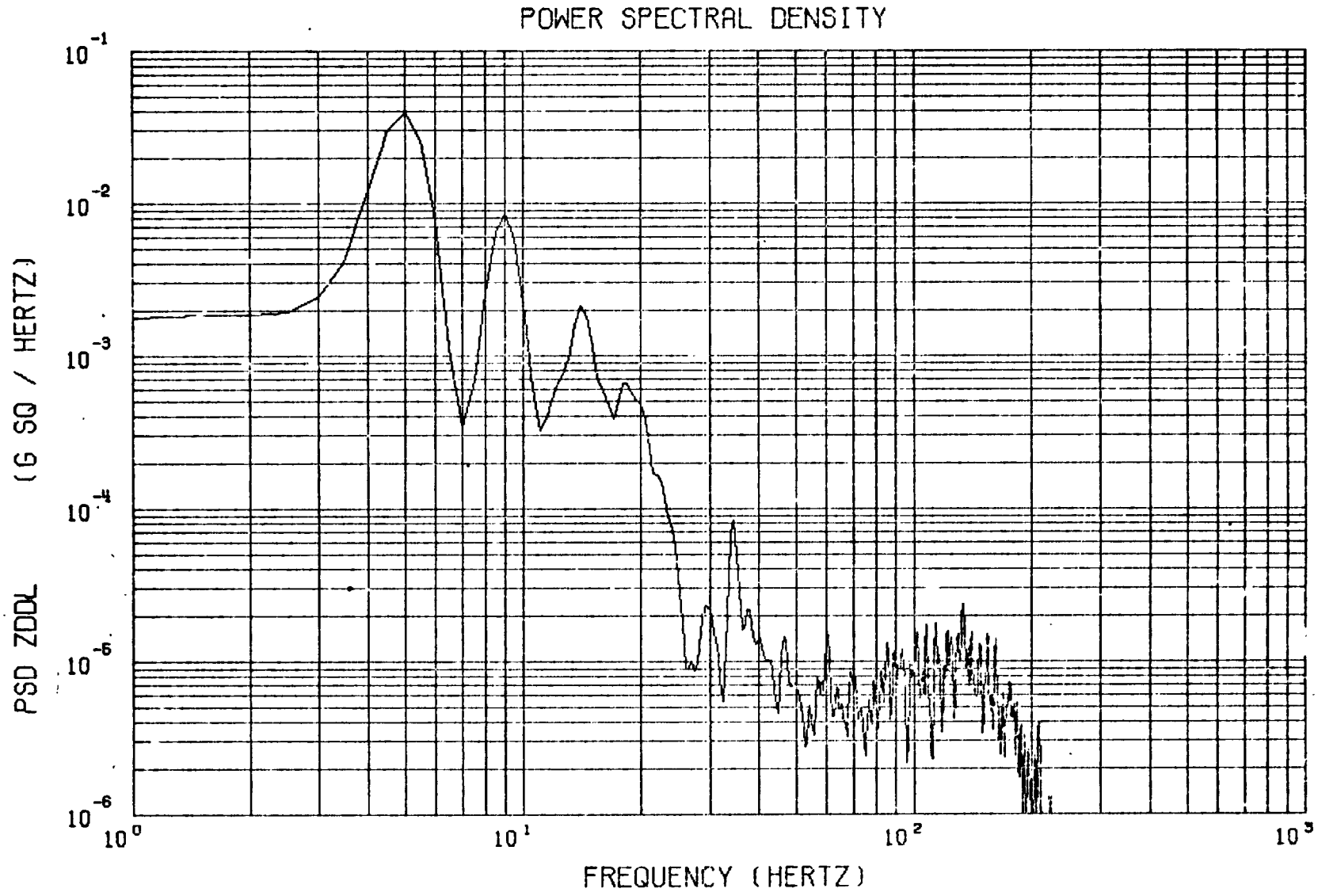
VIKING B FLT (CIF)

STAGE 0 IGN - 1

ZODL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.20a



ΔF = .500 START = 67140.200 SEC STOP = 67142.200 SEC

MEAN = 18553 x 10^{-6} σ^2 = 90274 x 10^{-6} σ = 30045 x 10^{-5} 3σ = 90137 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 1 ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.20b

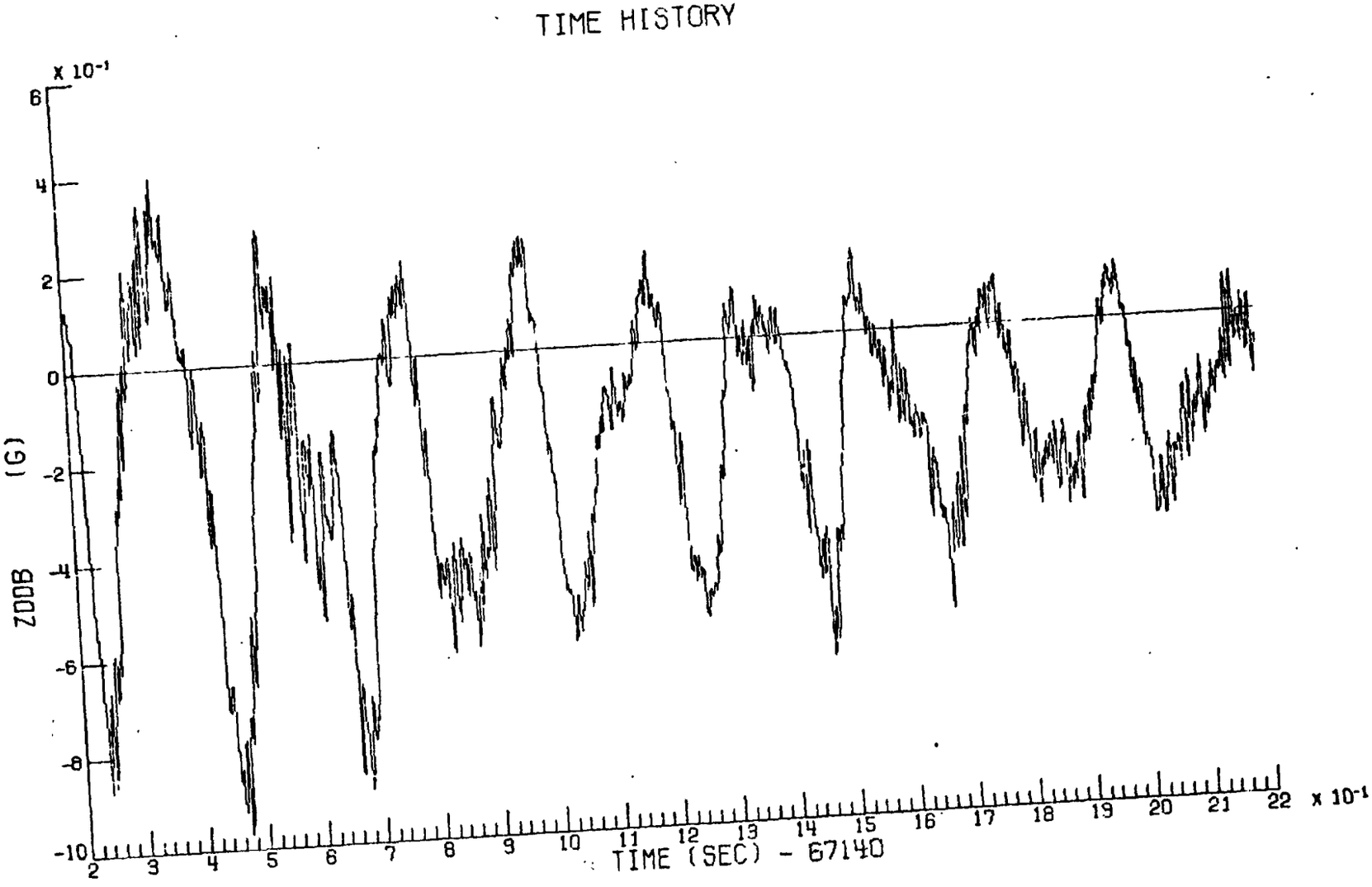
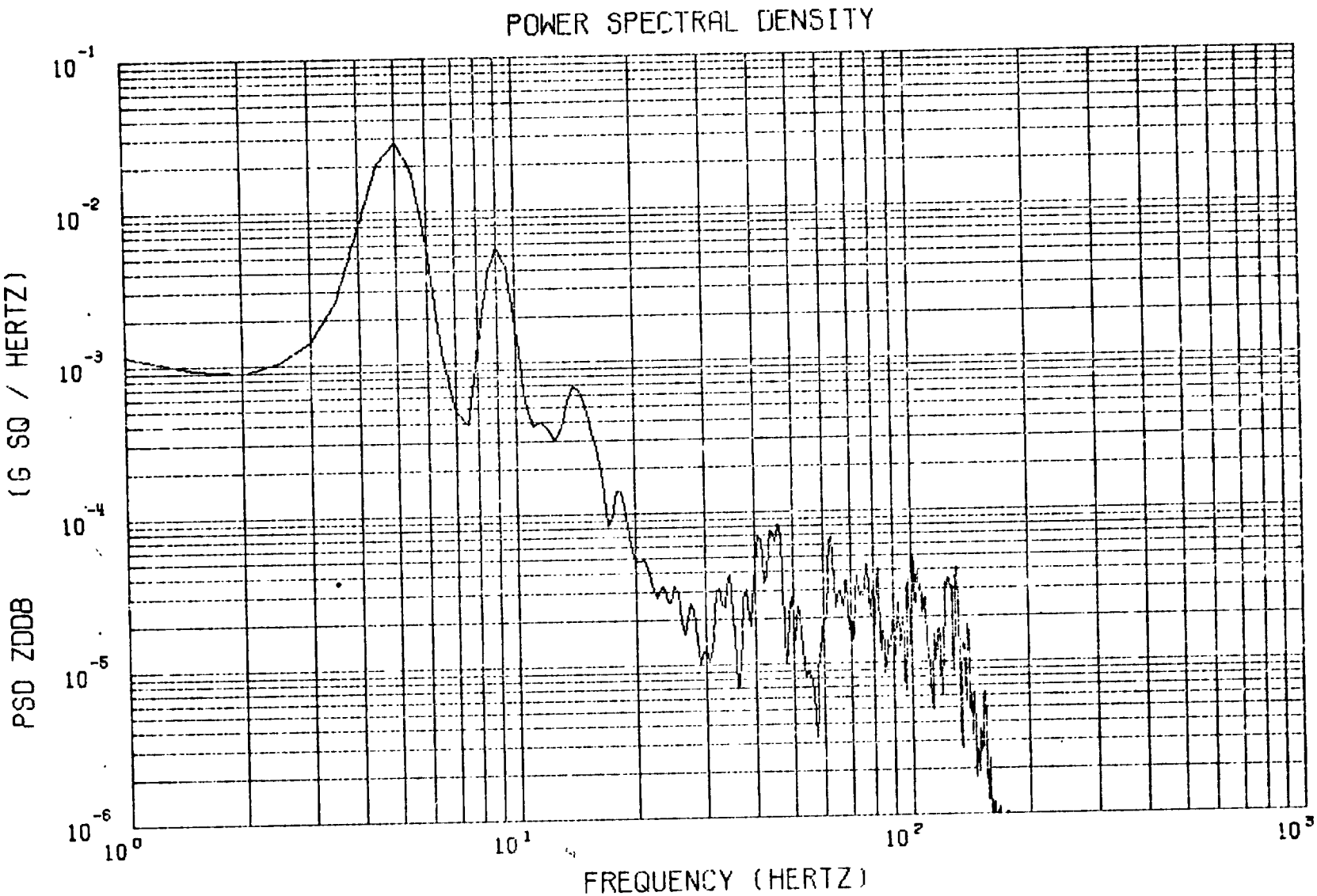

TIME HISTORY
X 10⁻¹
6
4
2
0
-2
-4
-6
-8
-10
ZDDB (G)
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 X 10⁻¹
TIME (SEC) - 67140
MAX = .396
MIN = -.970
VIKING B FLT (CIF)
STAGE 0 IGN - 1
ZDDB
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.21a



ΔF = .500 START = 67140.200 SEC STOP = 67142.200 SEC

MEAN = -19504 x 10^{-5} σ^2 = 61794 x 10^{-5} σ = 24858 x 10^{-5} 3σ = 74575 x 10^{-5}

VIKING B FLT (CIF) STAGE O IGN - 1 ZDDB

NASA-LANGLEY STRUM ANALYSIS PROGRAM 09/23/75

Figure 4.21b

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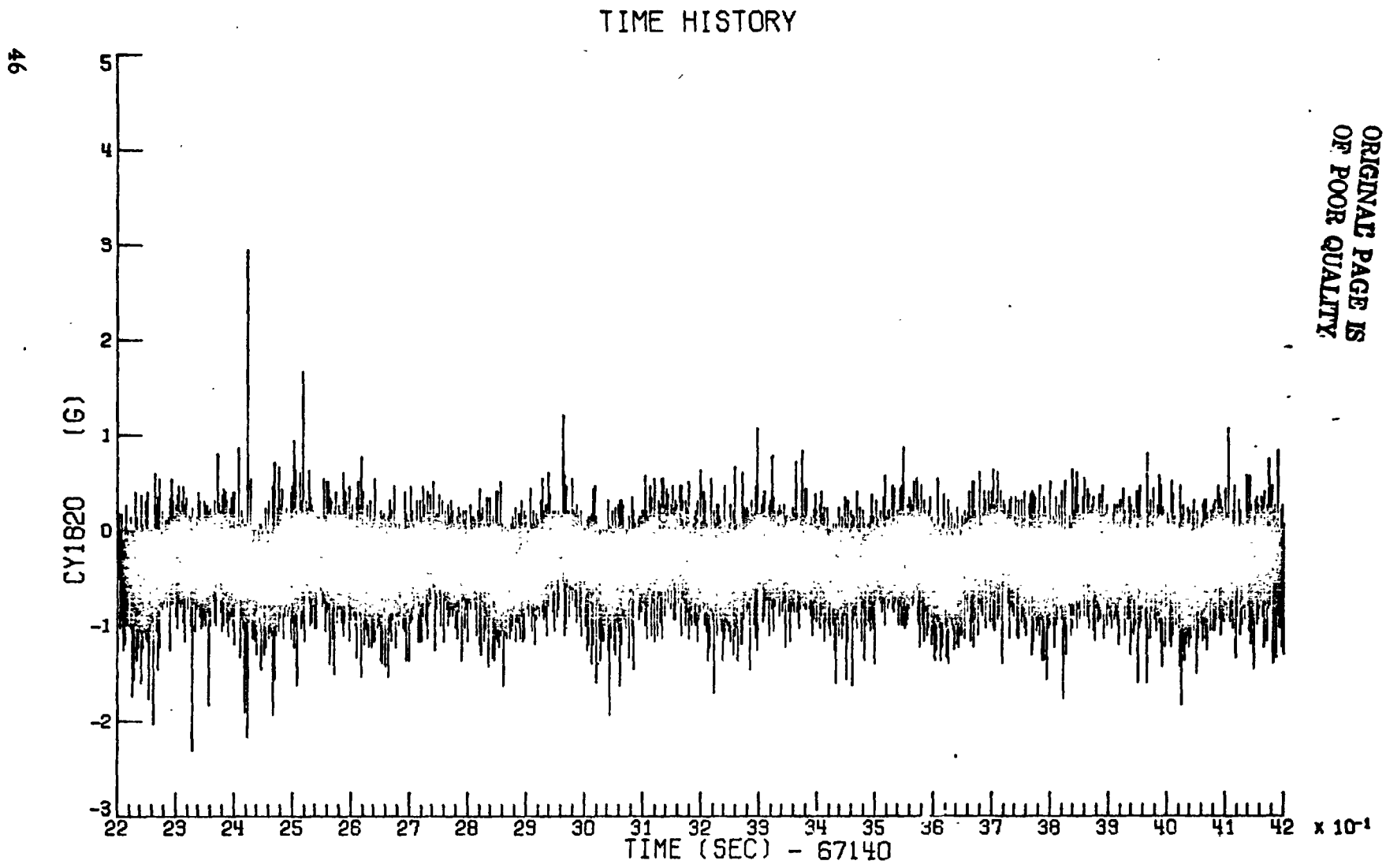


MAX = 2.934

MIN = -2.301

VIKING B FLT (CIF)

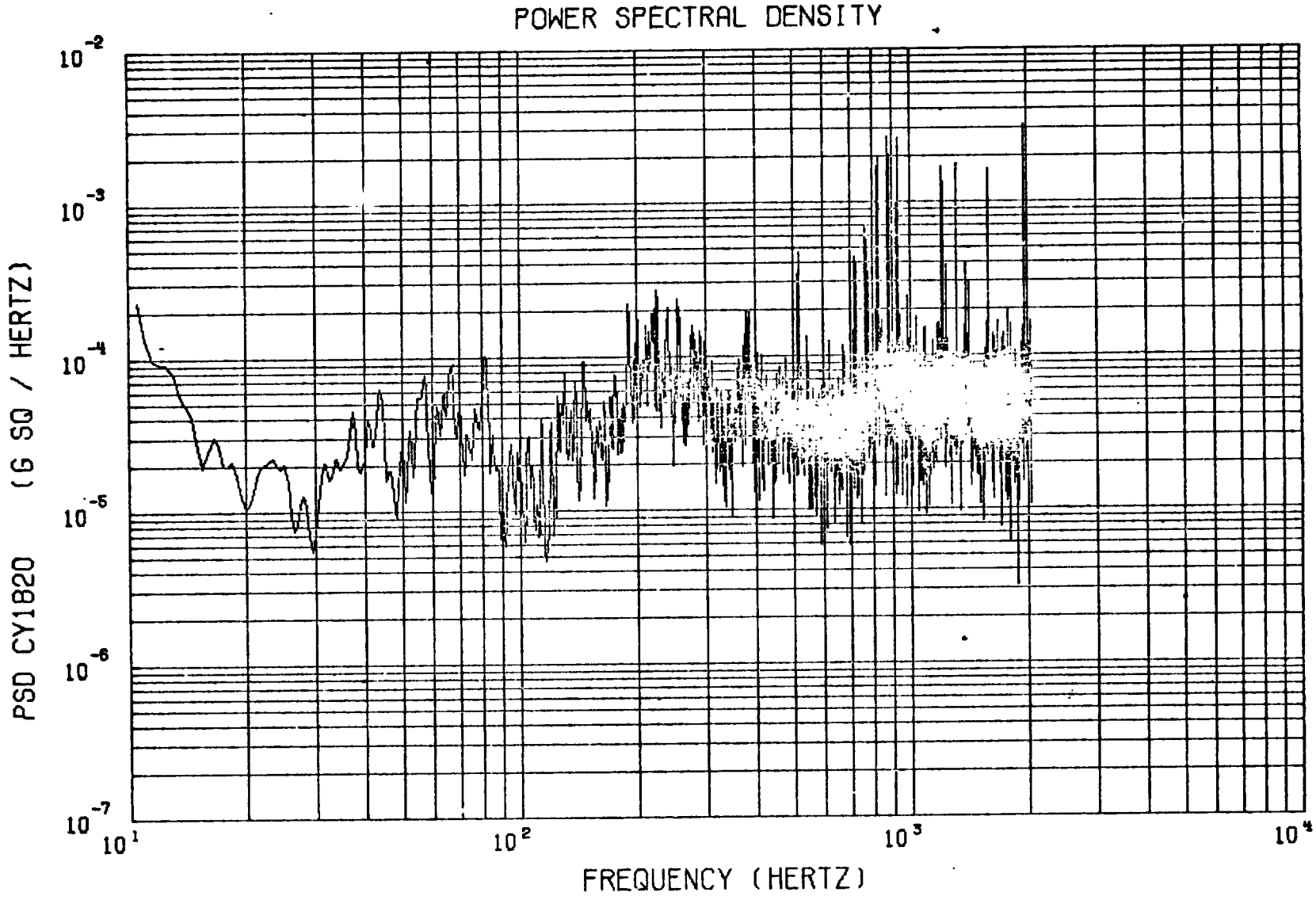
STAGE 0 IGN - 2

CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.22a



ΔF = .499 START = 67142.200 SEC STOP = 67144.199 SEC

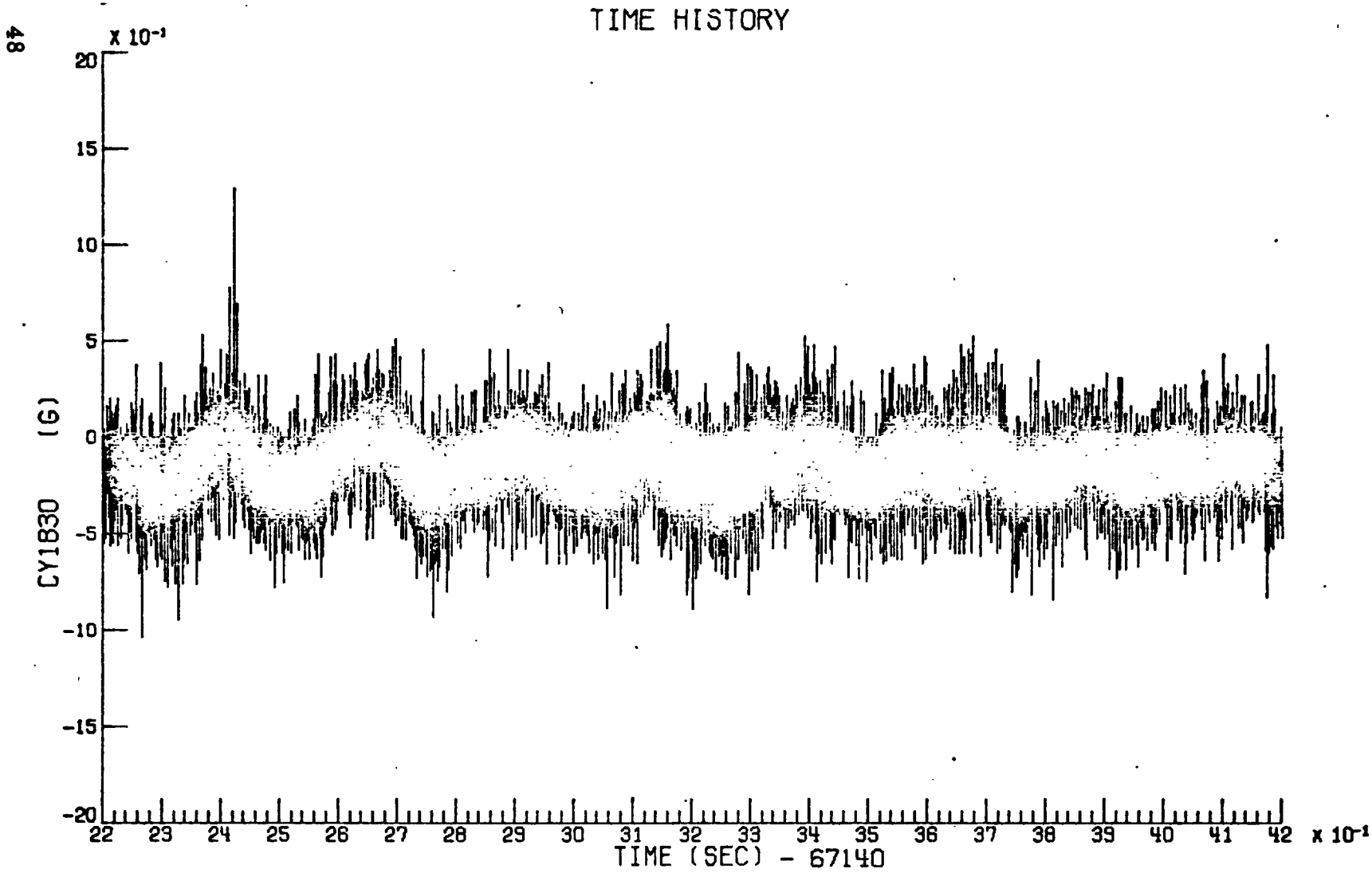
MEAN = -34218×10^{-5} $\sigma^2 = 14481 \times 10^{-5}$ $\sigma = 38054 \times 10^{-5}$ $3\sigma = 11416 \times 10^{-4}$

VIKING B FLT (CIF) STAGE O IGN - 2 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.22b



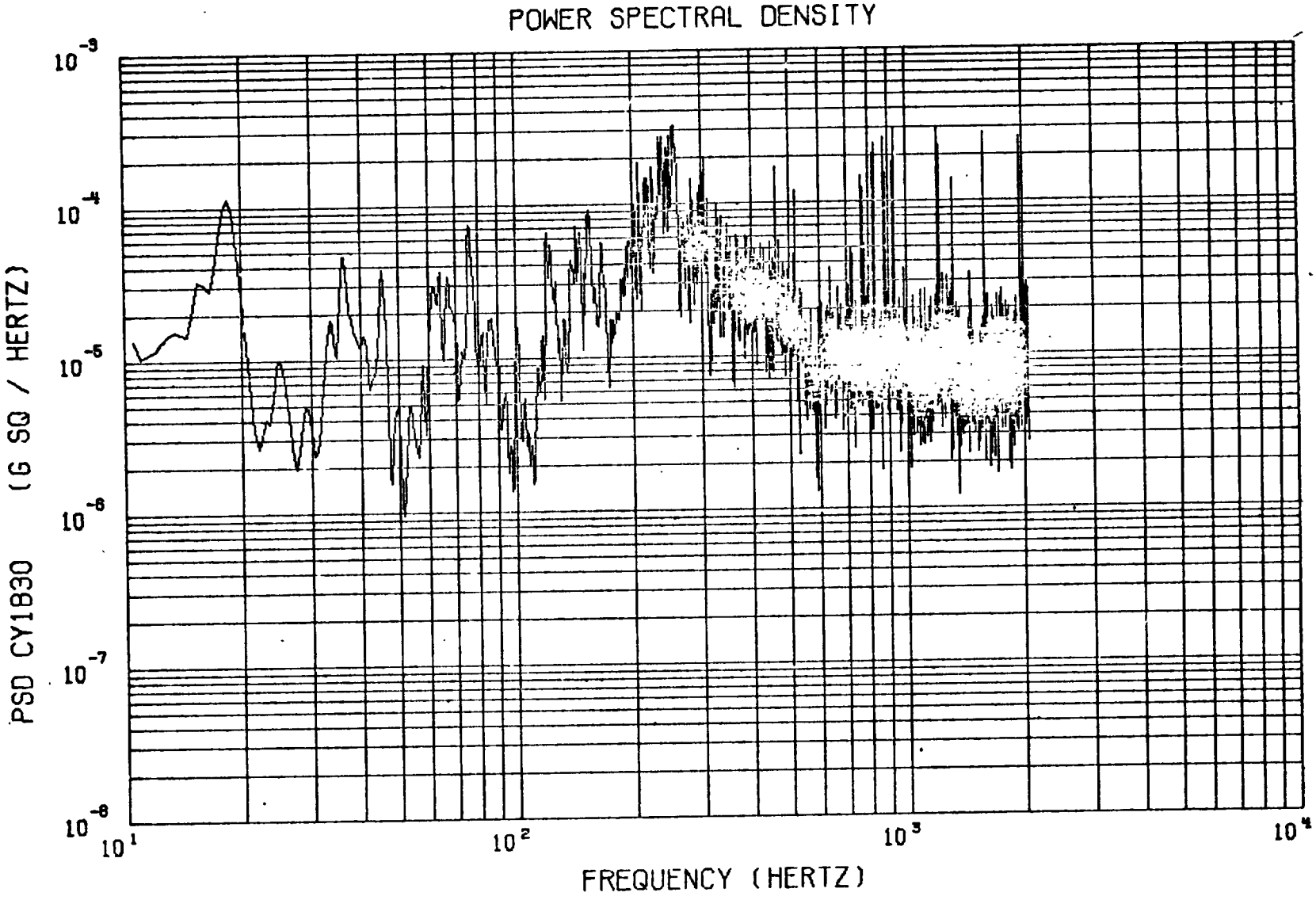
MAX = 1.295 MIN = -1.041

VIKING B FLT (CIF) STAGE 0 IGN - 2 CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4090 SPS

Figure 4.23a



ΔF = .499 START = 67142.200 SEC STOP = 67144.199 SEC

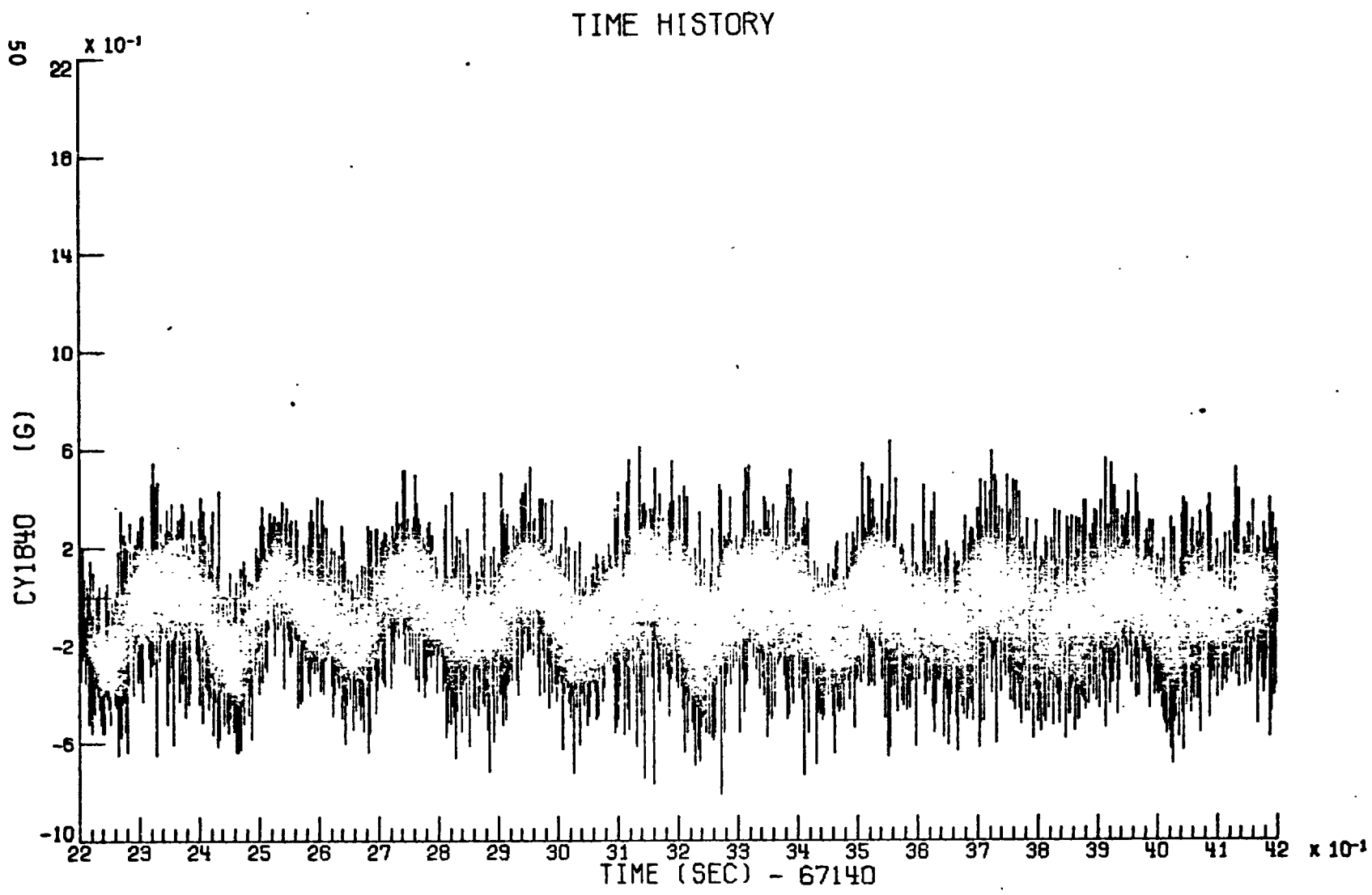
MEAN = -14752 x 10^{-5} σ^2 = 4388 x 10^{-5} σ = 20947 x 10^{-5} 3σ = 62843 x 10^{-5}

VIKING J FLT (CIF) STAGE O IGN - 2 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.23b



MAX = .628

MIN = -.811

VIKING B FLT (CIF)

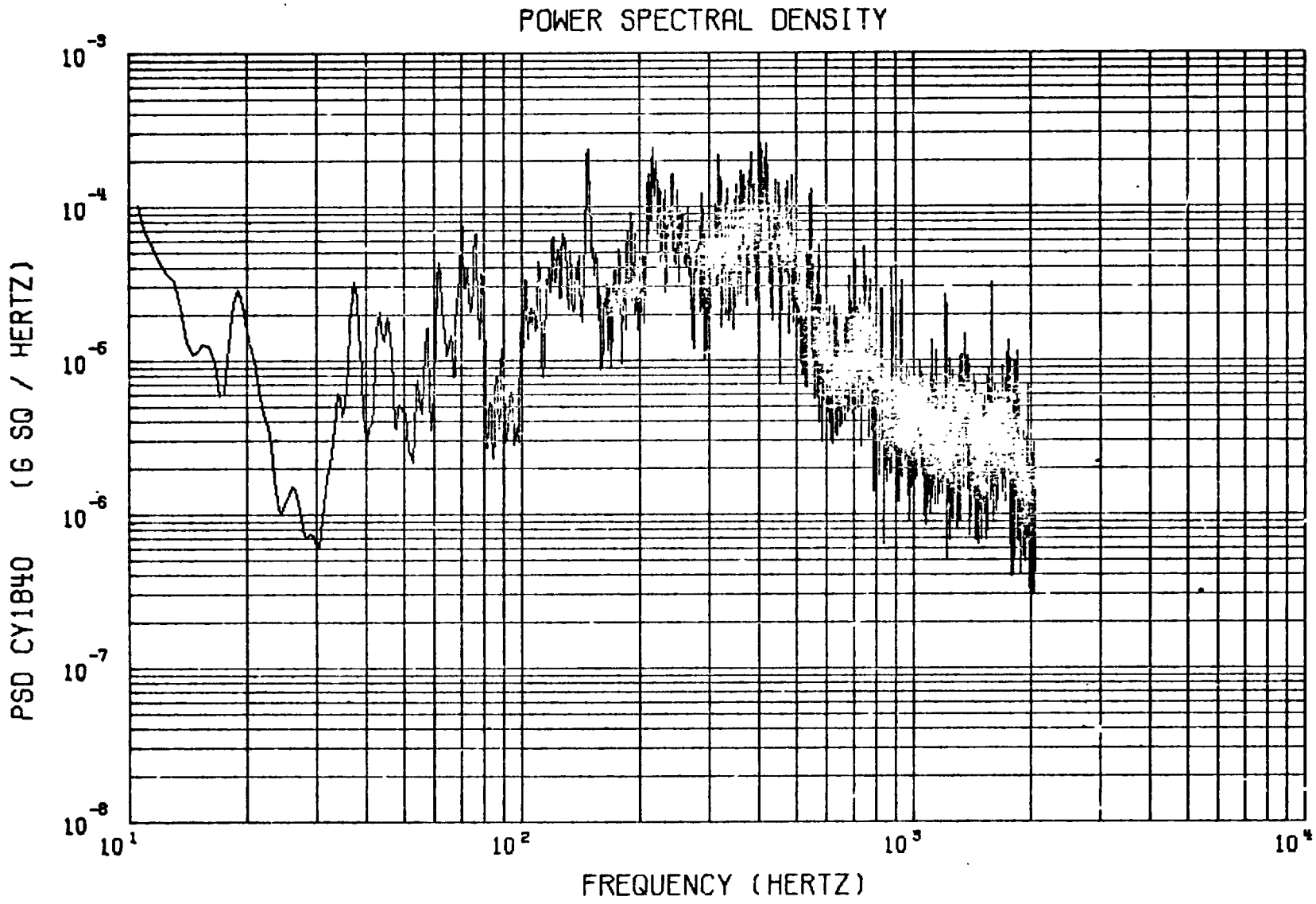
STAGE 0 IGN - 2

4096 SPS

CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.24a



ΔF = .499 START = 67142.200 SEC STOP = 67144.199 SEC

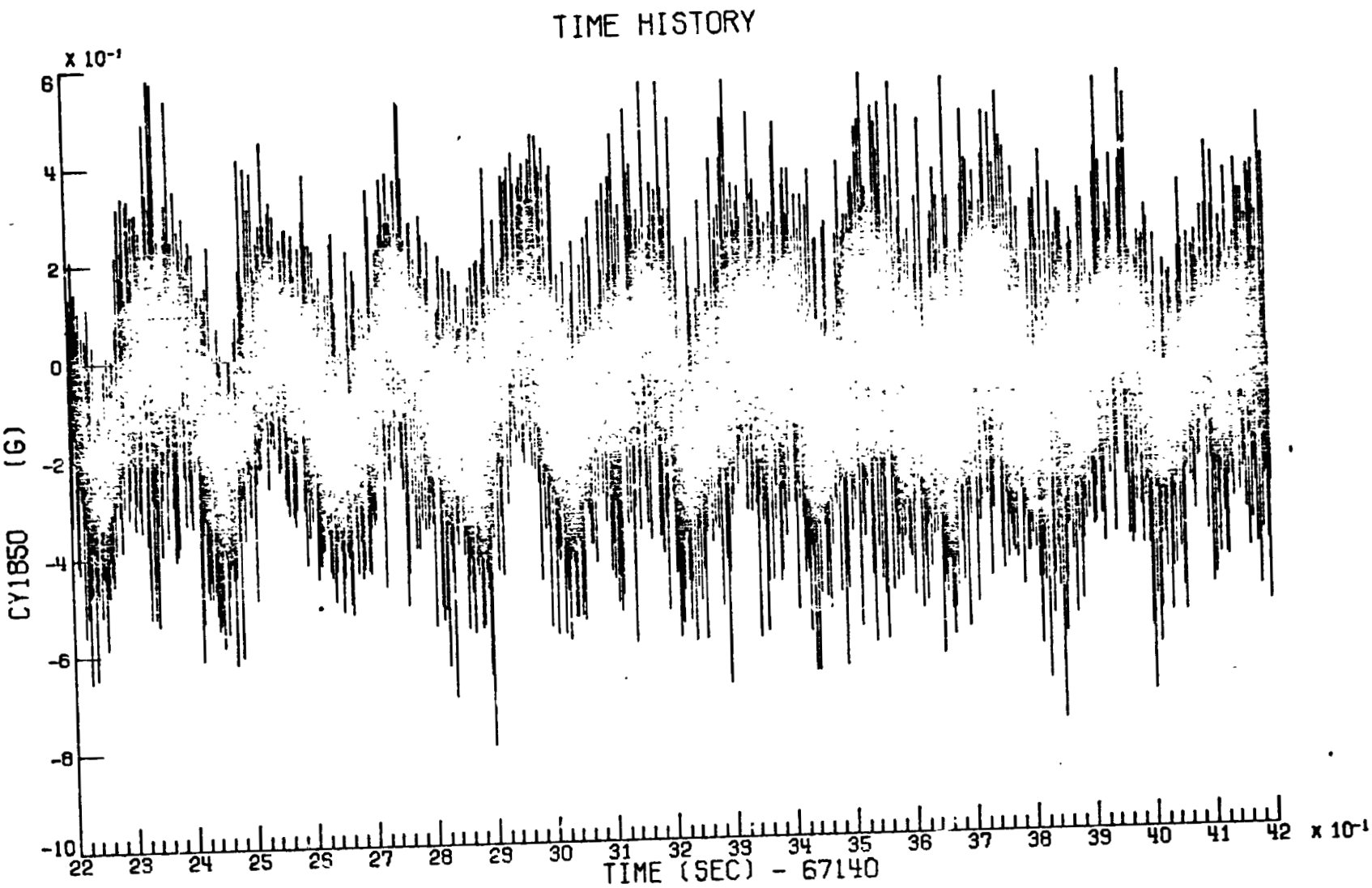
MEAN = -78874×10^{-8} $\sigma^2 = 43415 \times 10^{-5}$ $\sigma = 20836 \times 10^{-5}$ $3\sigma = 62509 \times 10^{-5}$

VIKING B FLT (CIF) STAGE O IGN - 2 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.24b



MAX = .578

MIN = -.795

VIKING B FLT (CIF)

STAGE 0 IGN - 2

4096 SPS

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.25a

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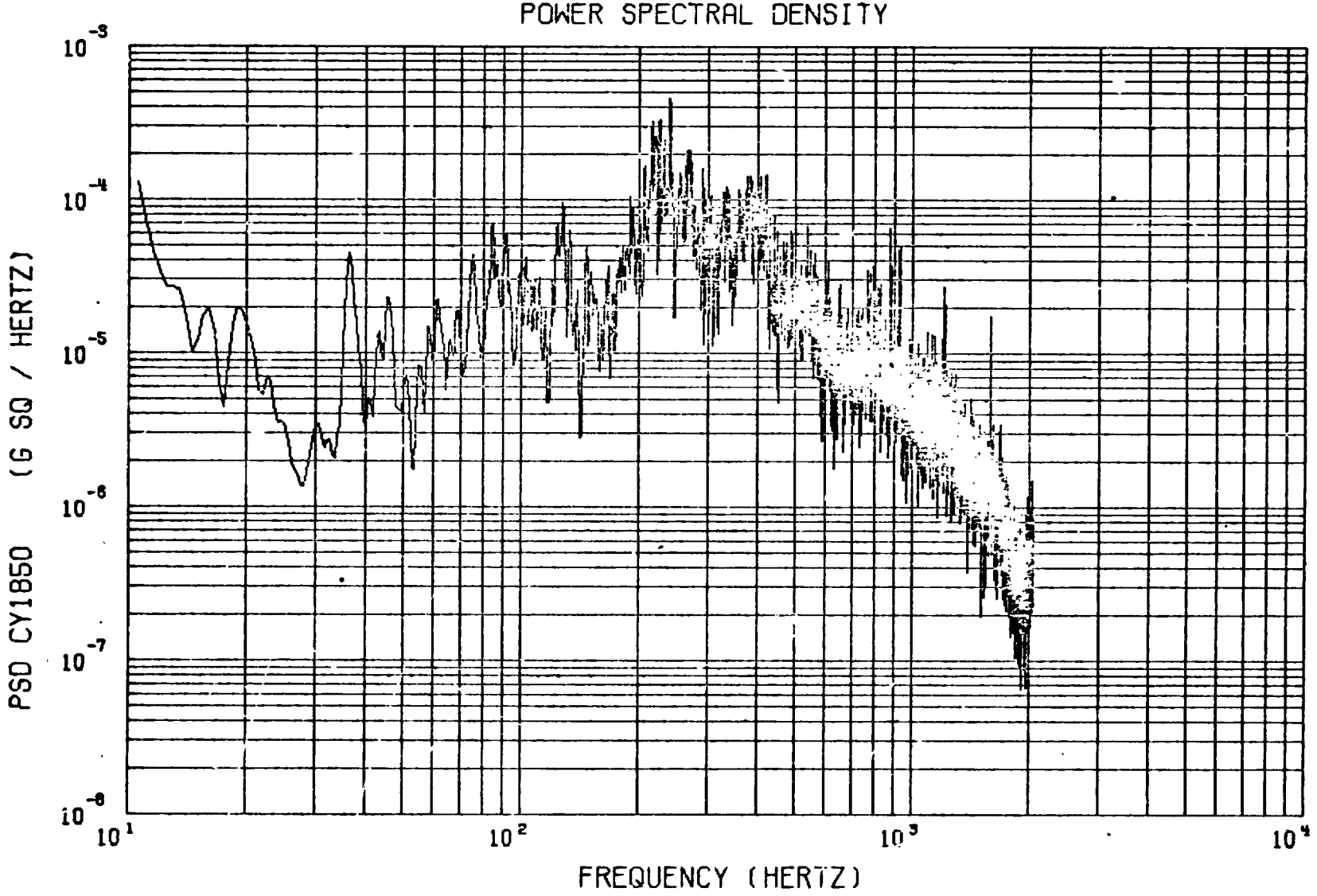


ΔF = .499 START = 67142.200 SEC STOP = 67144.199 SEC

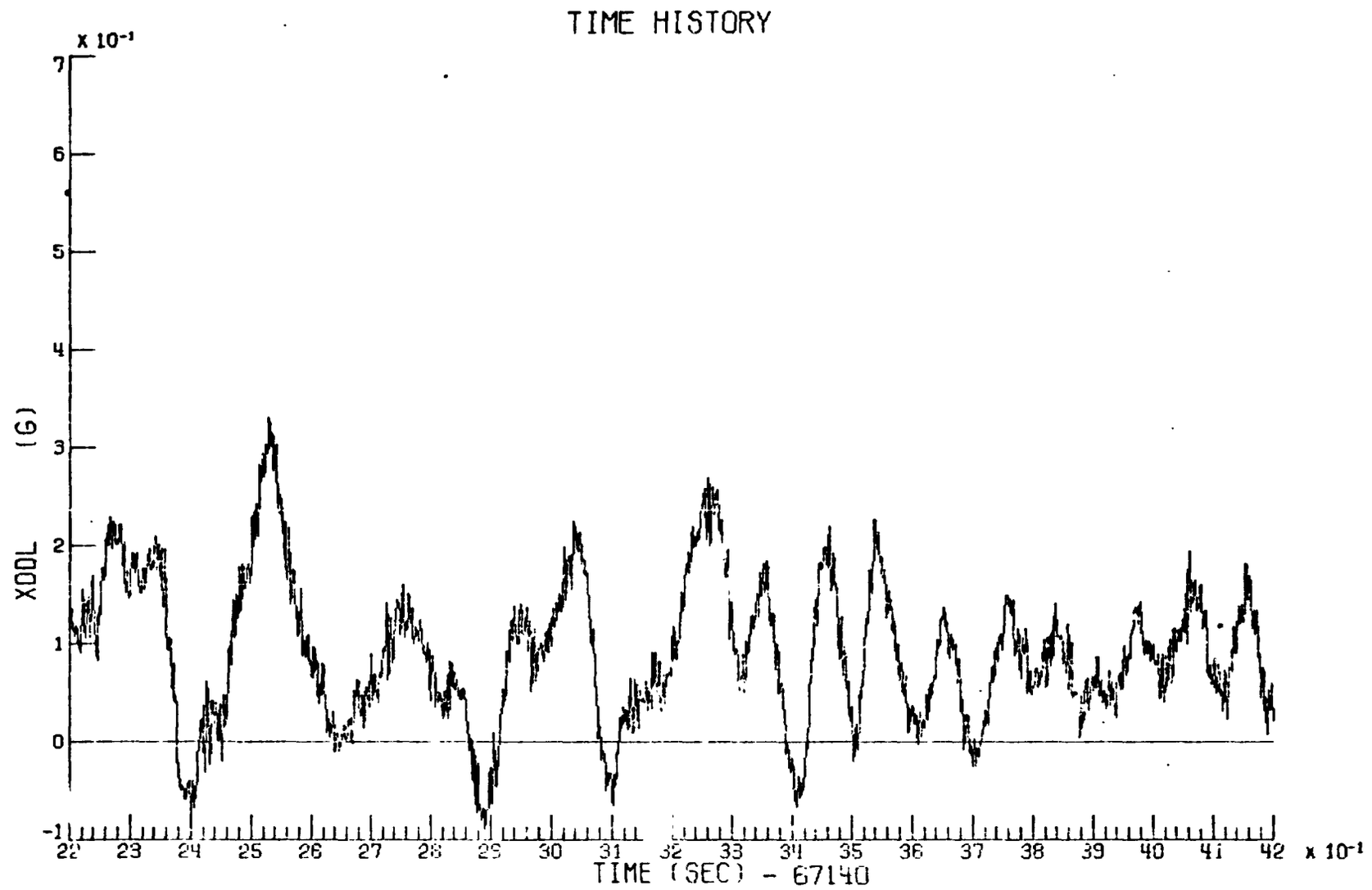
MEAN = -.7614 x 10^{-5} σ^2 = 40437 x 10^{-8} σ = .20109 x 10^{-3} 3σ = 60327 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 2 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.25b

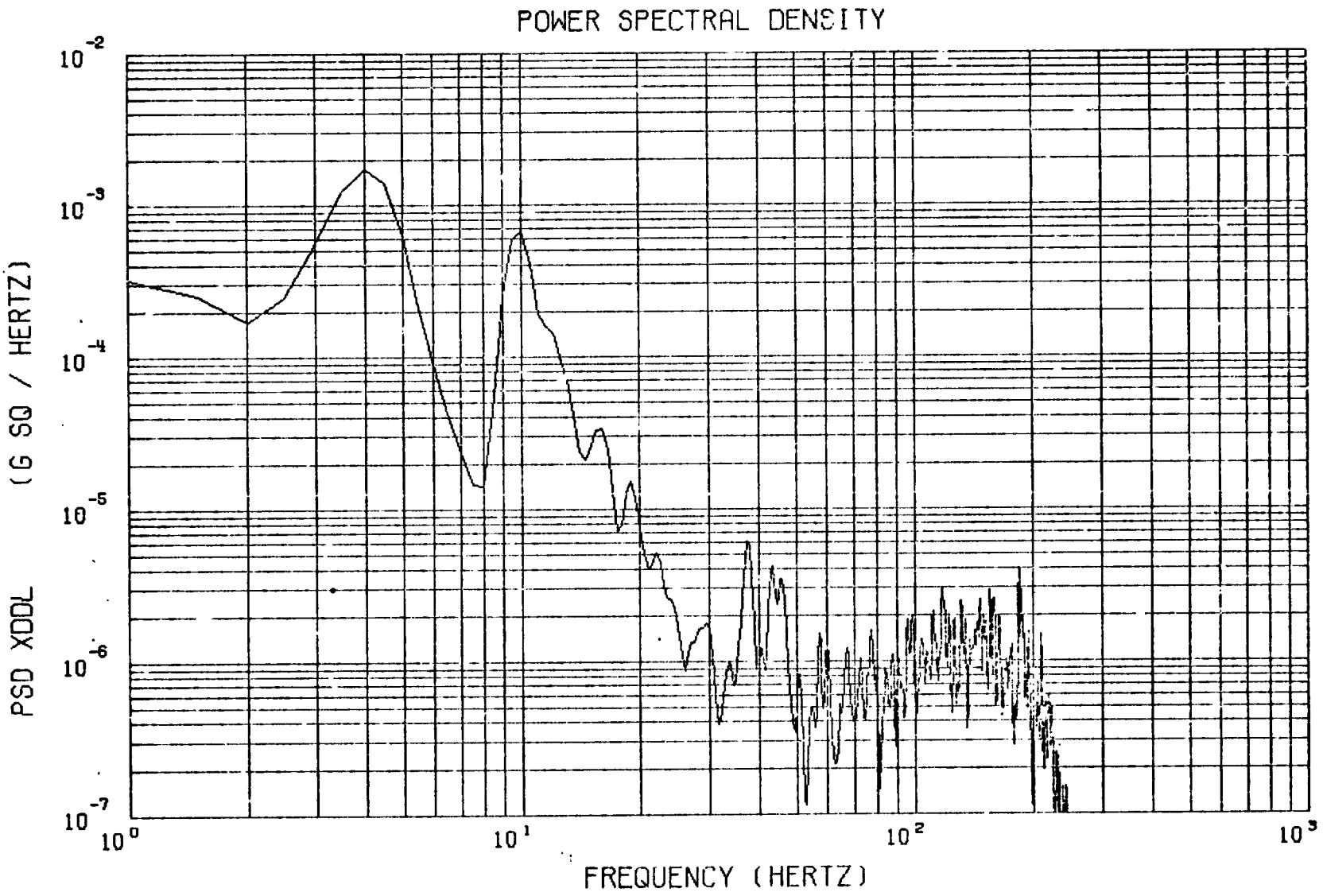


MAX = .330 MIN = -.089

VIKING B FLT (CIF) STAGE 0 IGN - 2 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.26a



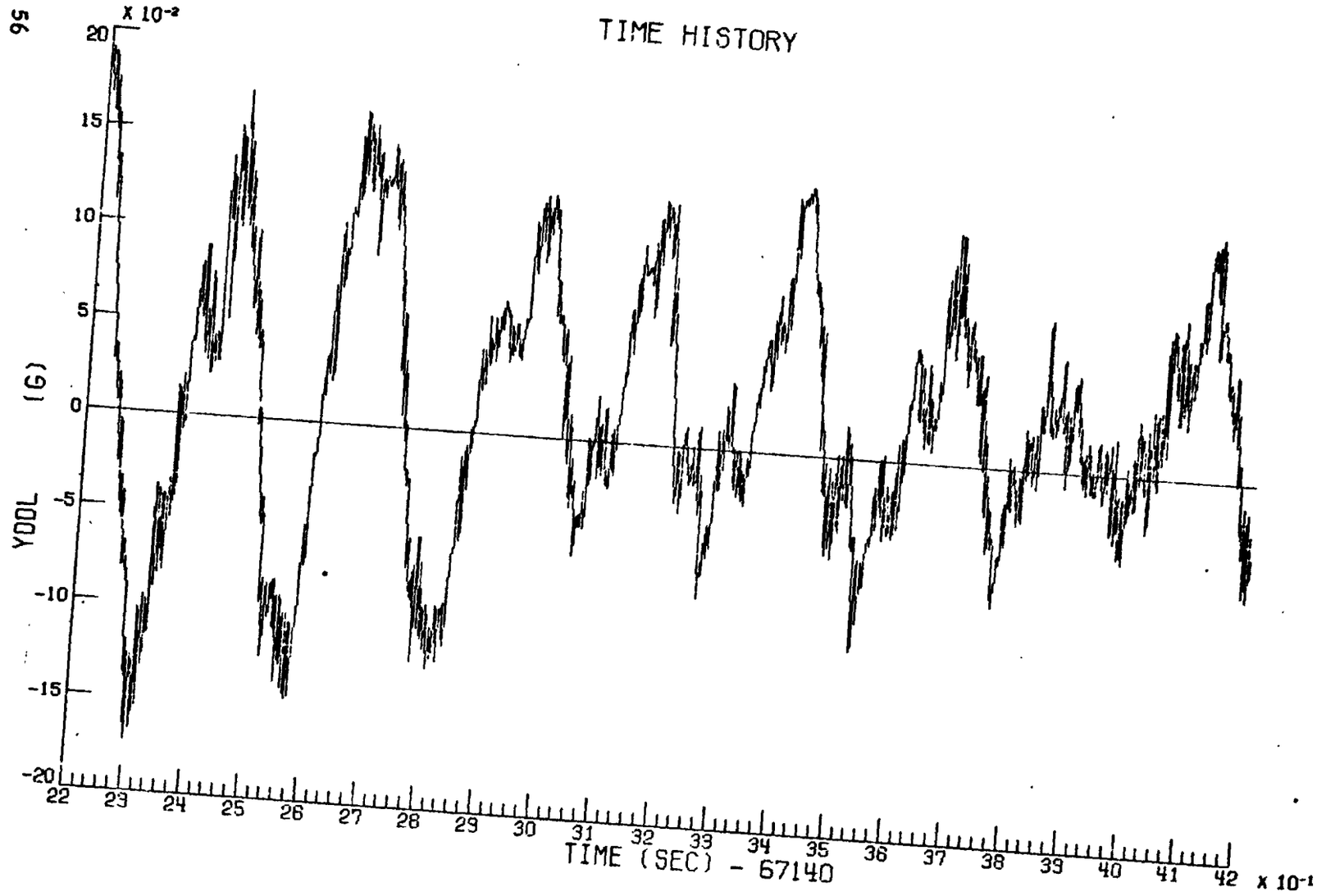
ΔF = .500 START = 67142.200 SEC STOP = 67144.199 SEC

MEAN = 91875 x 10^{-6} σ^2 = 53359 x 10^{-7} σ = 73047 x 10^{-6} 3σ = 21914 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 2 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.26b



MAX = .190

MIN = -.173

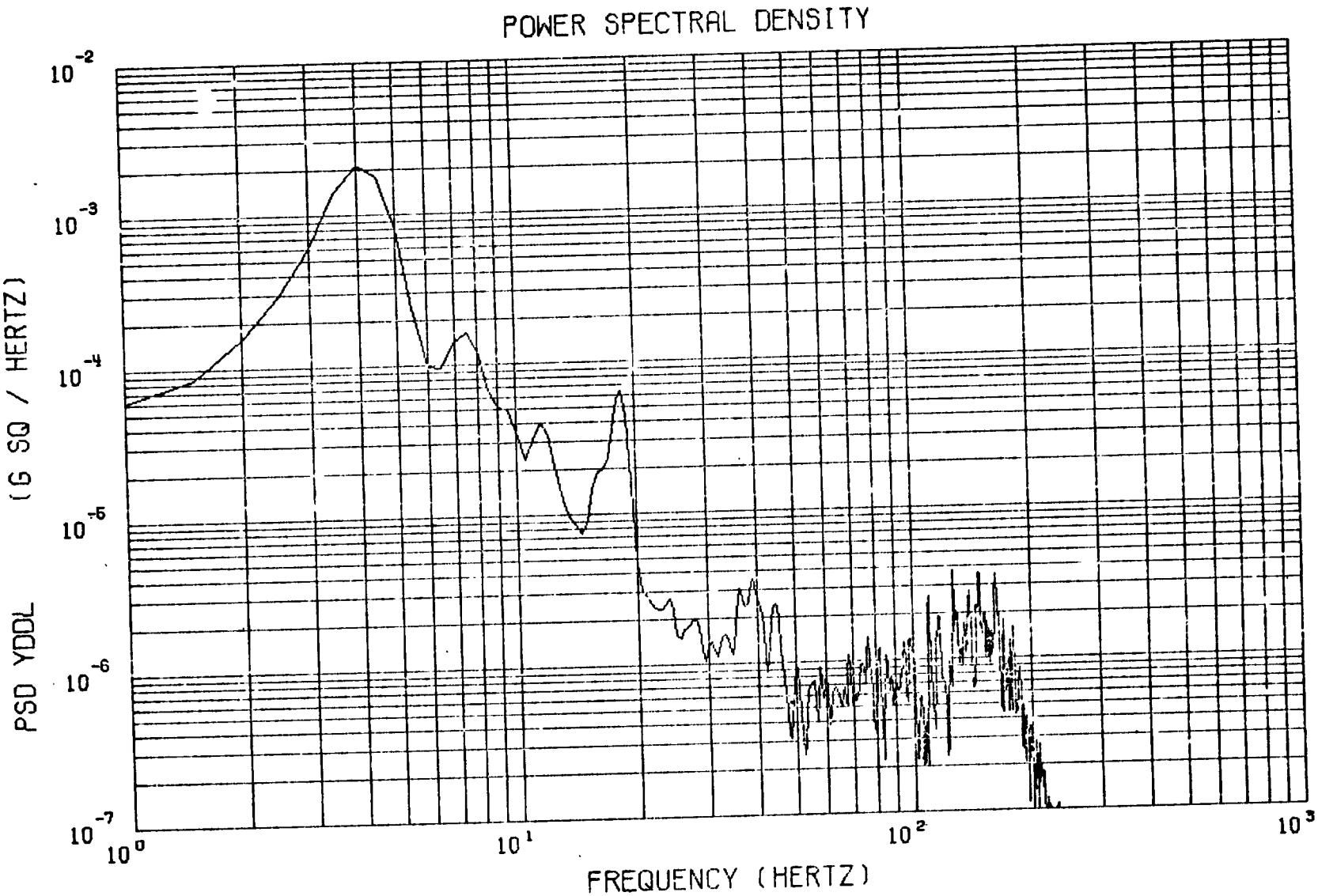
VIKING B FLT (CIF)

STAGE 0 IGN - 2

YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.27a



ΔF = .500 START = 67142.200 SEC STOP = 67144.199 SEC

MEAN = 20008 x 10^{-5} σ^2 = 46931 x 10^{-7} σ = 68506 x 10^{-6} 3σ = 20552 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 2 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.27b

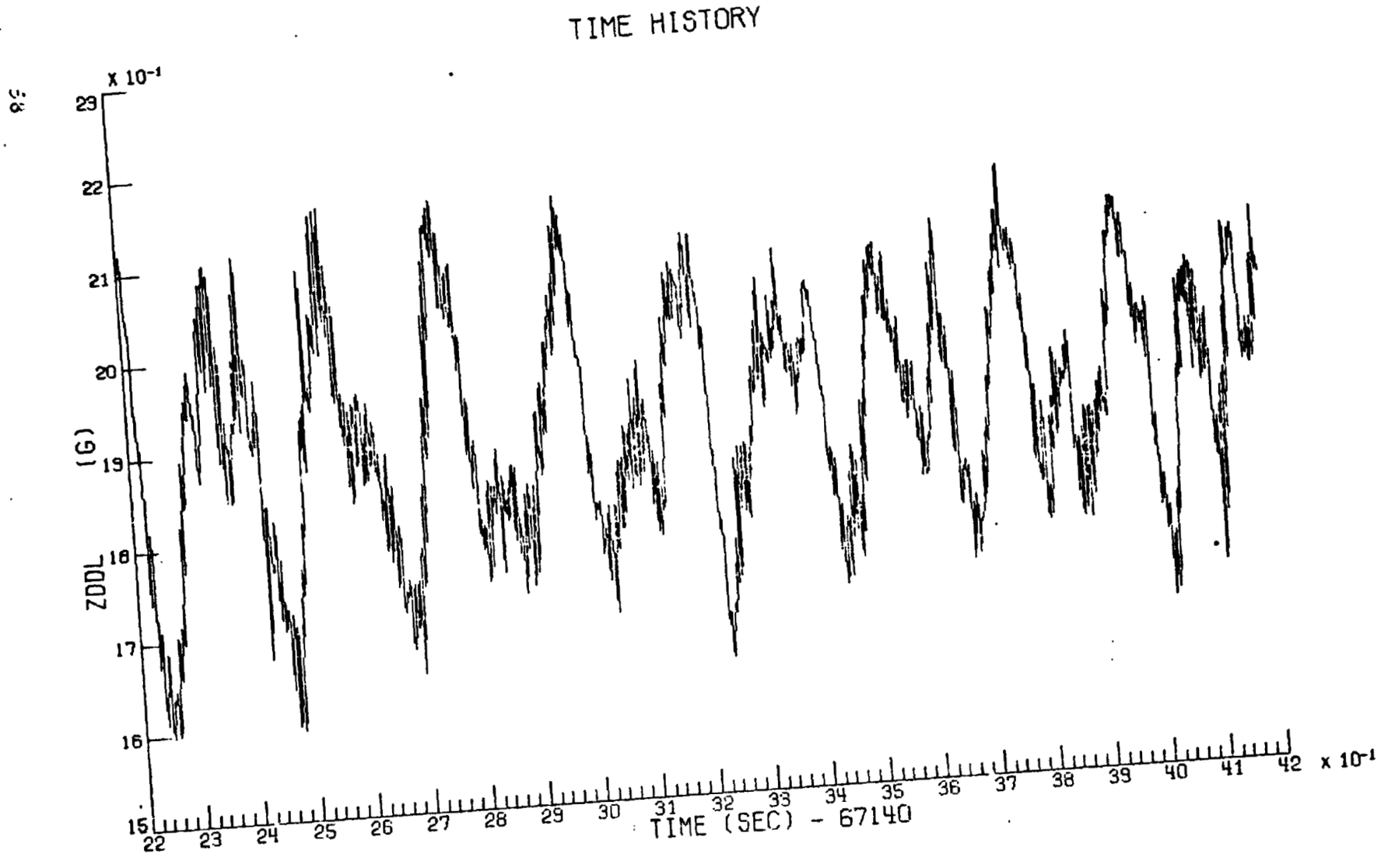
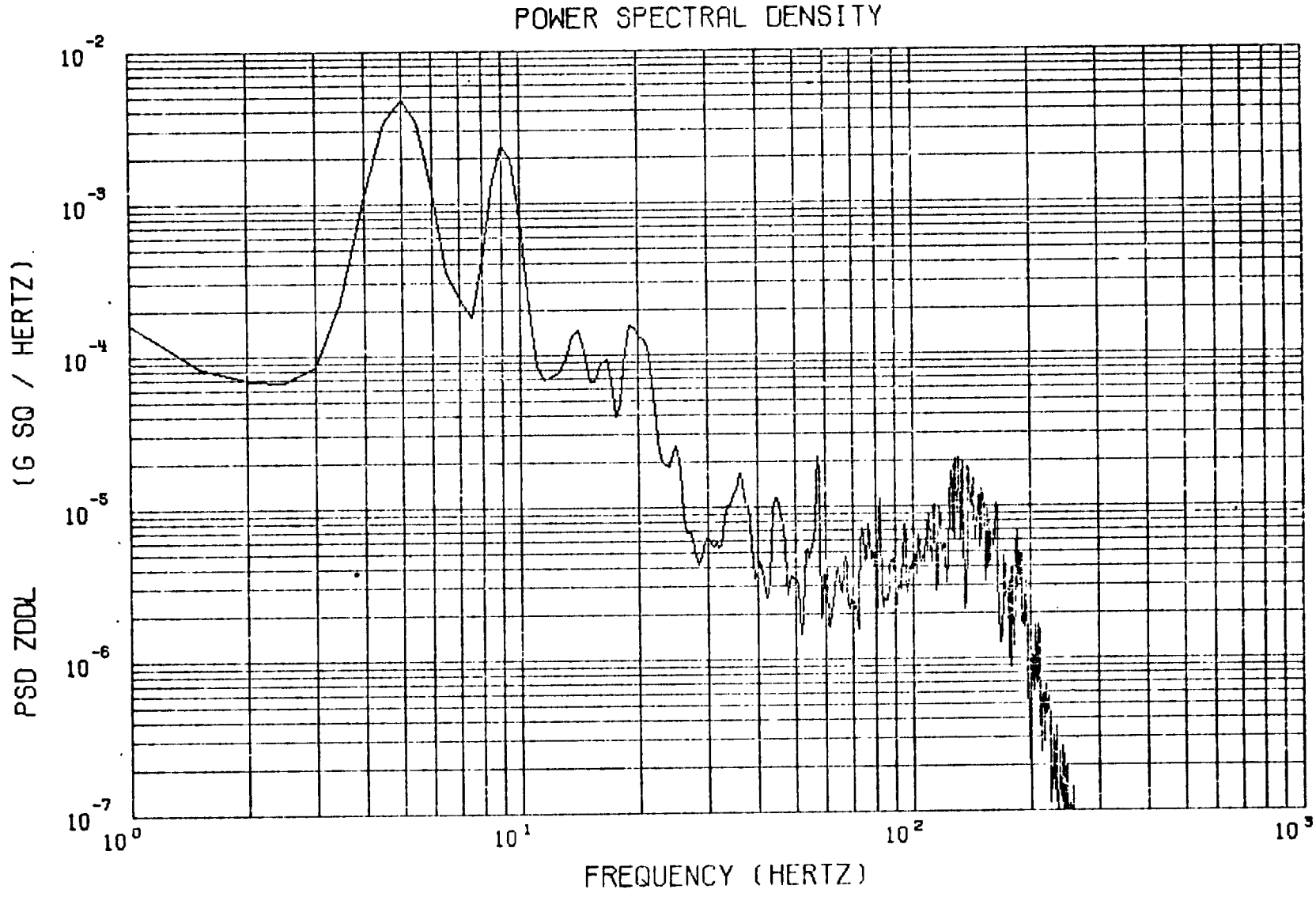

TIME HISTORY
X 10⁻¹
23
22
21
20
19
18
17
16
15
(G)
ZDDL
22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 x 10⁻¹
TIME (SEC) - 67140
MAX = 2.159
MIN = 1.597
VIKING B FLT (CIF)
STAGE 0 IGN - 2
ZDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.28a



ΔF = .500 START = 67142.200 SEC STOP = 67144.199 SEC

MEAN = 19095 x 10^{-4} σ^2 = 13701 x 10^{-5} σ = 11705 x 10^{-5} 3σ = 35116 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 2 . ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.28b

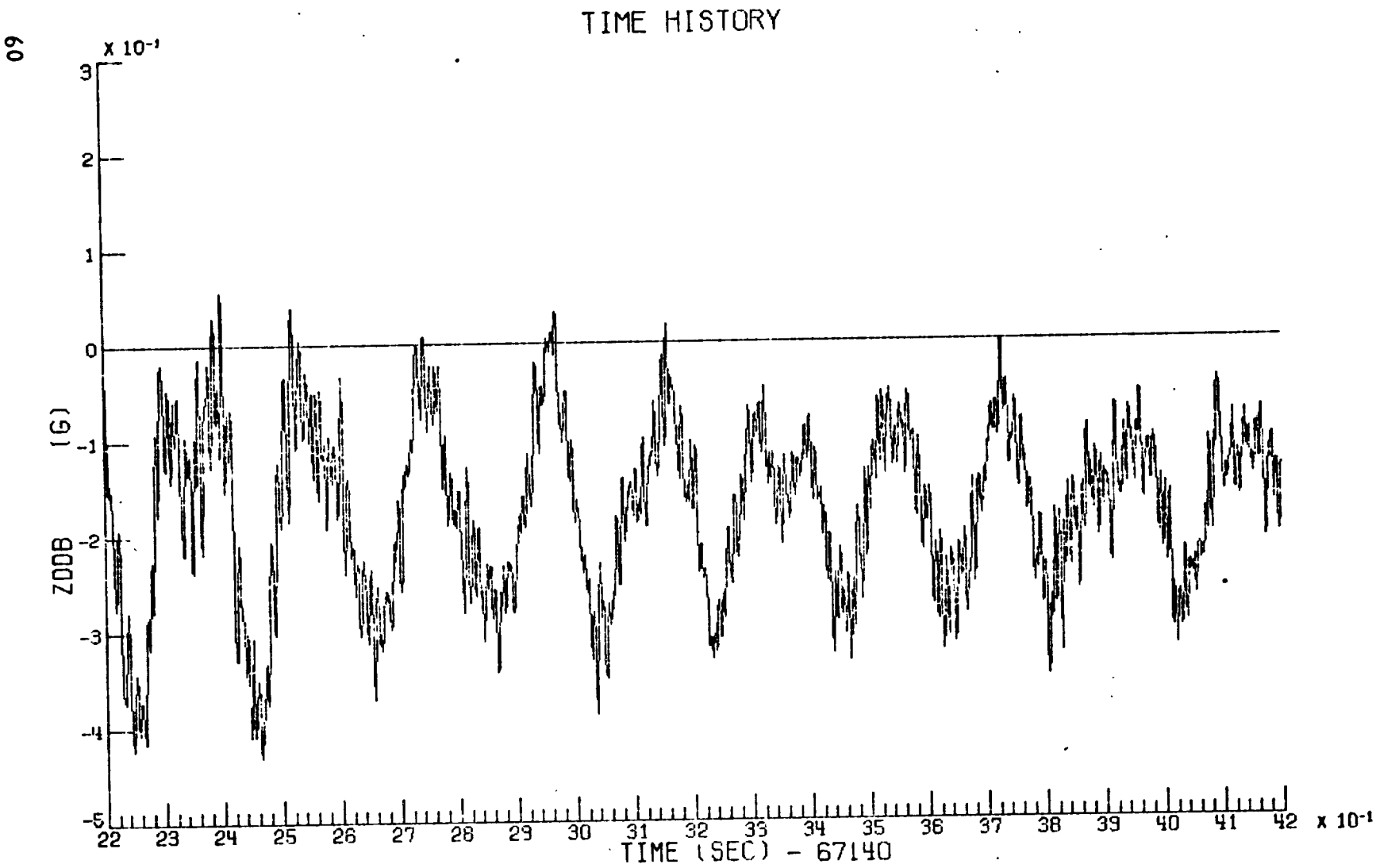
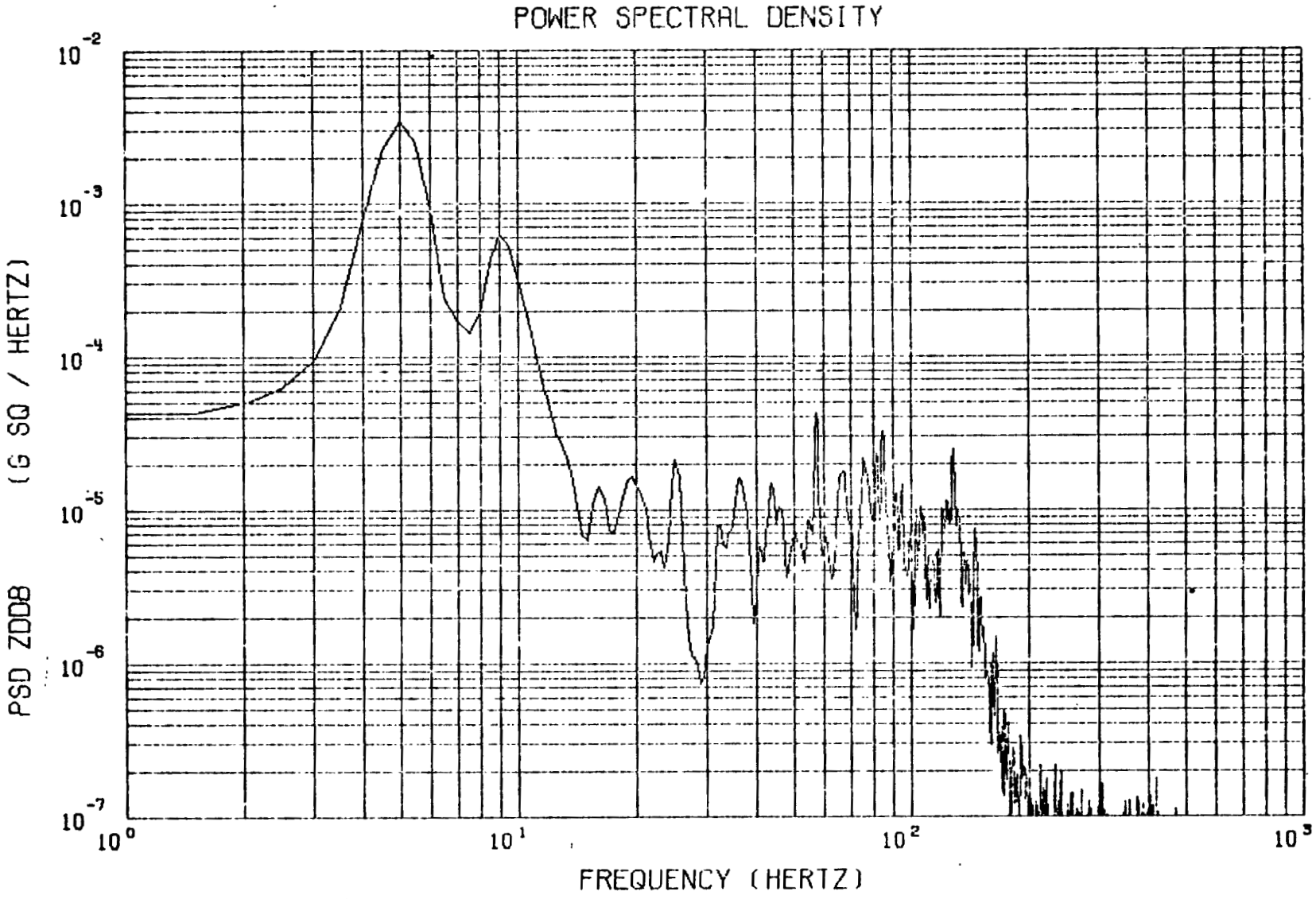

TIME HISTORY
60
X 10⁻¹
3
2
1
0
-1
-2
-3
-4
-5
ZDDB (G)
22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 X 10⁻¹
TIME (SEC) - 67140
MAX = .055
MIN = -.431
VIKING B FLT (CIF)
STAGE 0 IGN - 2
ZDDB
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.29a



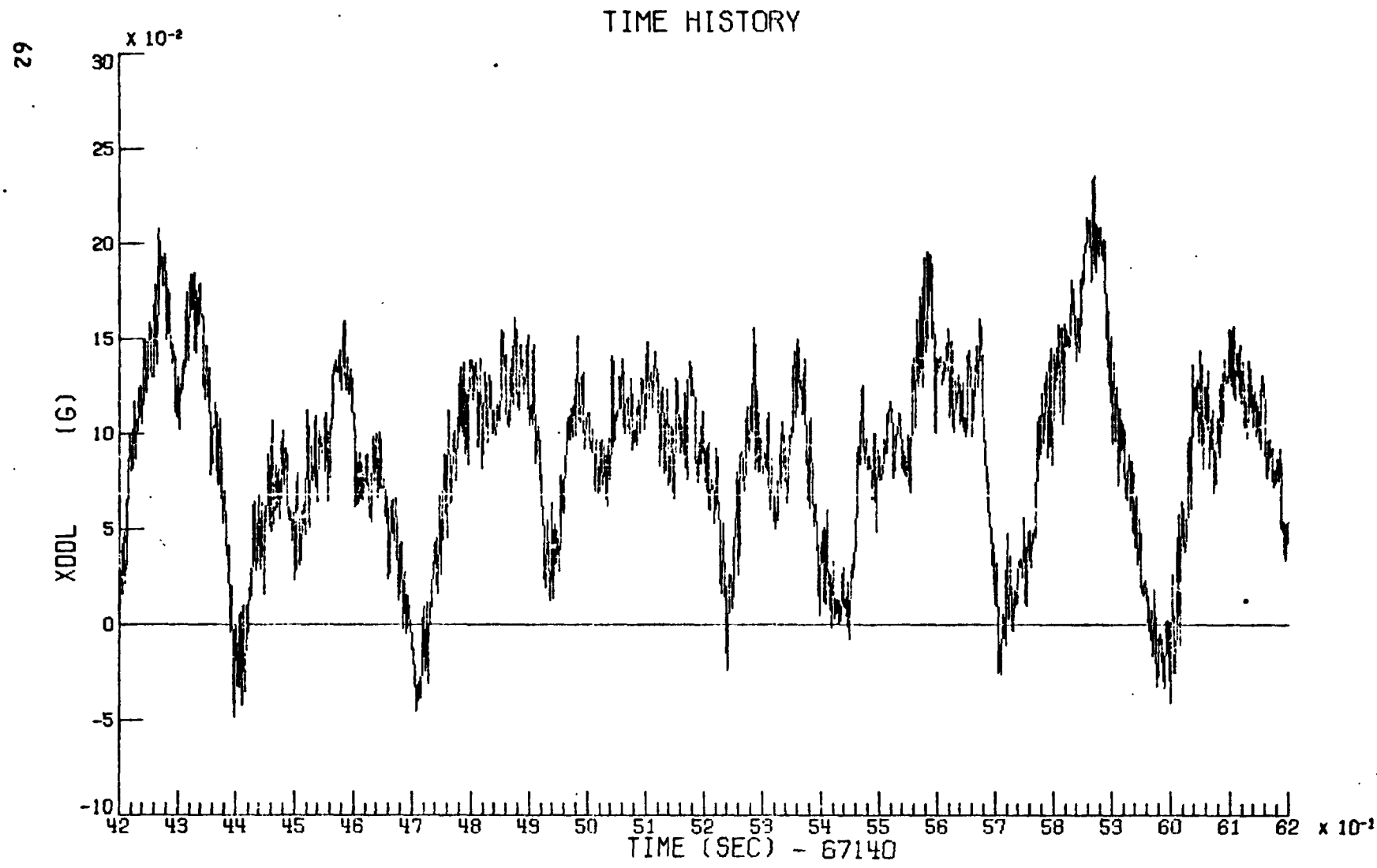
ΔF = .500 START = 67142.200 SEC STOP = 67144.199 SEC

MEAN = -17324 x 10^{-5} σ^2 = 80122 x 10^{-7} σ = 89511 x 10^{-6} 3σ = 26853 x 10^{-5}

VIKING B FLT (CIF) STAGE 0 IGN - 2 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/25/75

Figure 4.29b



MAX = .235

MIN = -.048

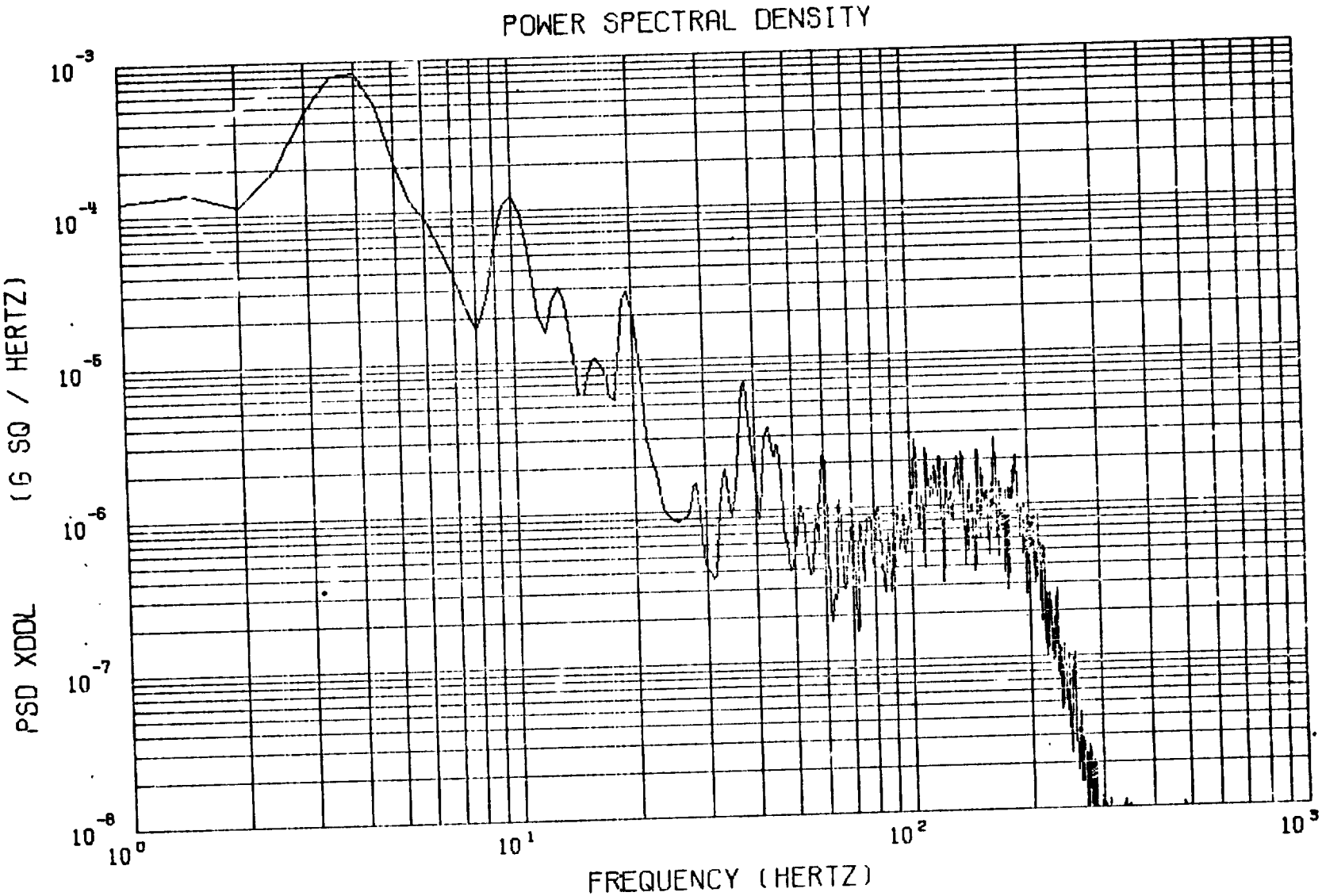
VIKING B FLT (CIF)

STAGE 0 IGN - 3

XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.30a



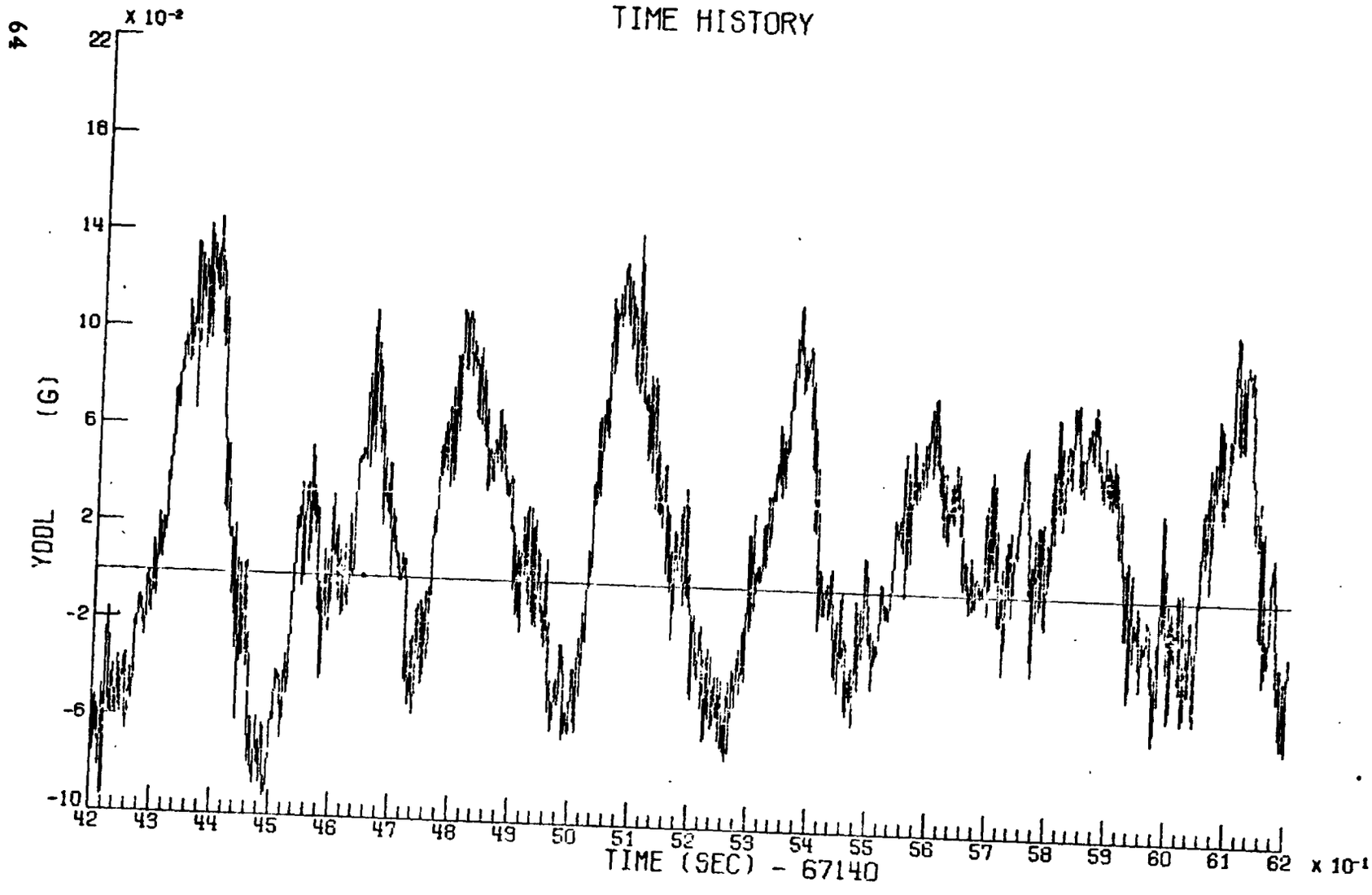
ΔF = .500 START = 67144.200 SEC STOP = 67146.199 SEC

MEAN = 87939 x 10^{-6} σ^2 = 25146 x 10^{-7} σ = 50146 x 10^{-6} 3σ = 15044 x 10^{-5}

VIKING B FLT (CIF) STAGE O IGN - 3 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.30b



MAX = .145

MIN = -.093

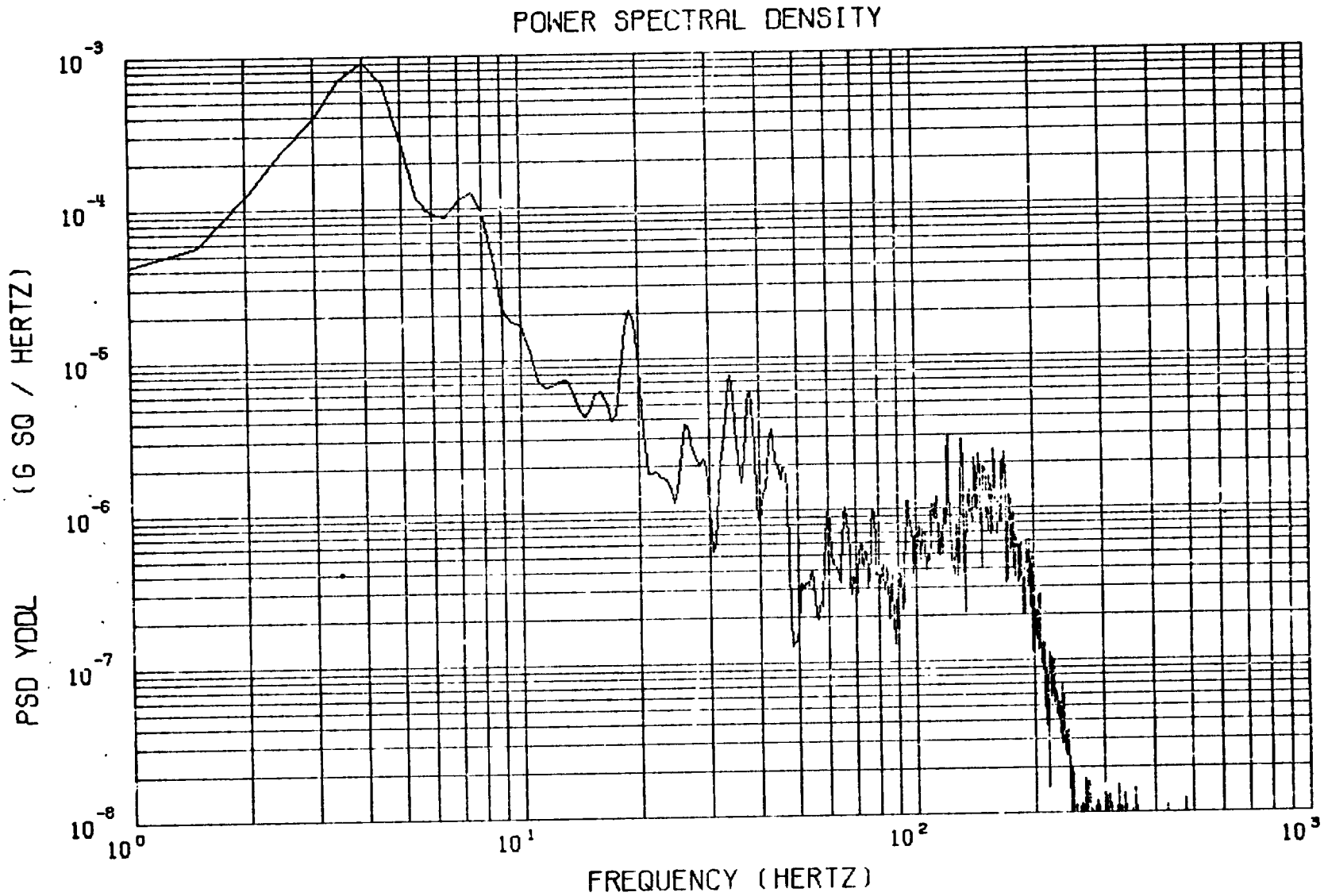
VIKING B FLT (CIF)

STAGE 0 IGN - 3

YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.31a



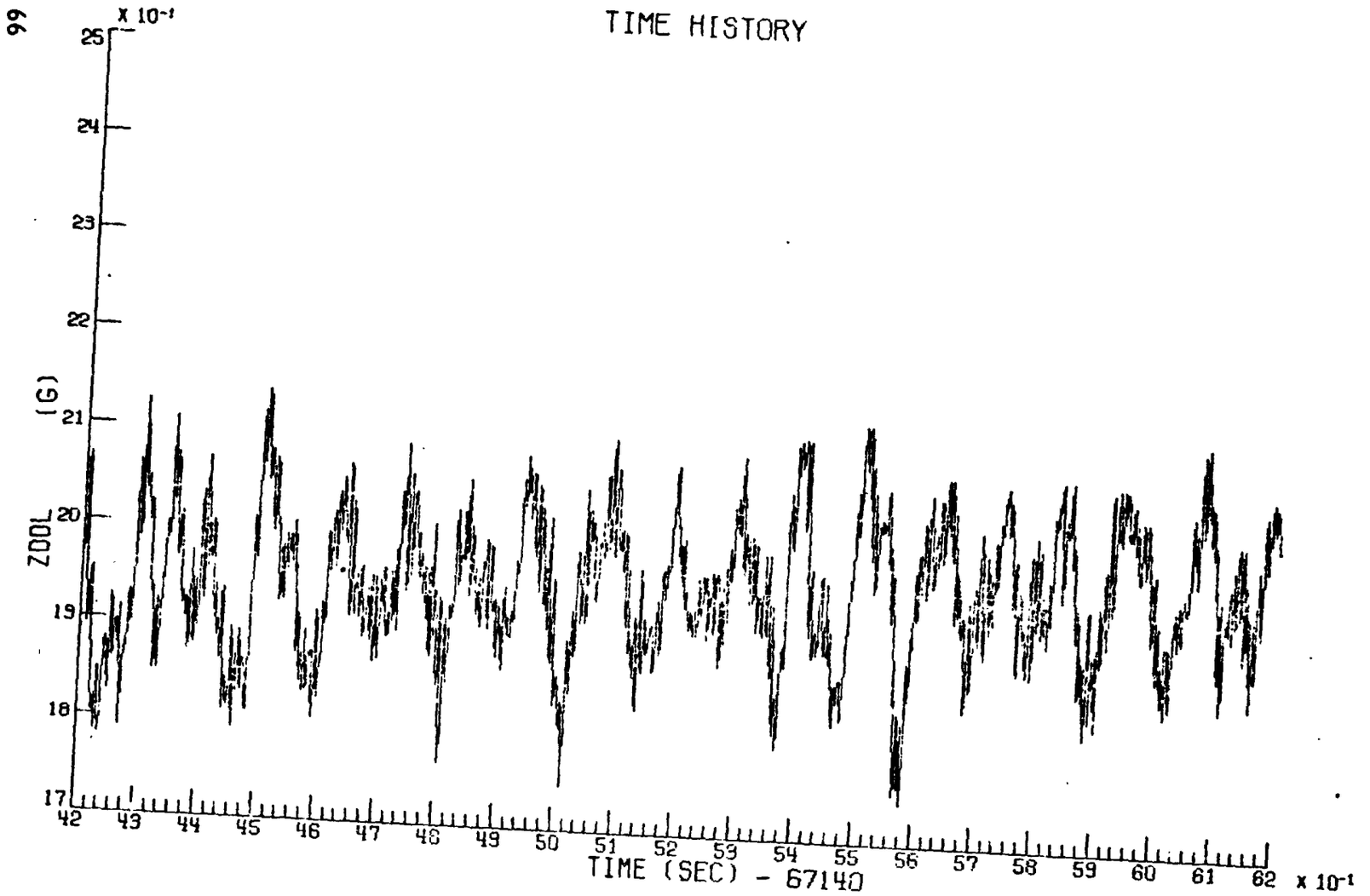
ΔF = .500 START = 67144.200 SEC STOP = 67146.193 SEC

MEAN = 17555 x 10^{-6} σ^2 = 23675 x 10^{-7} σ = 48657 x 10^{-6} 3σ = 14597 x 10^{-5}

VIKING B FLT (CIF) STAGE O IGN - 3 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.31b



MAX = 2.139

MIN = 1.742

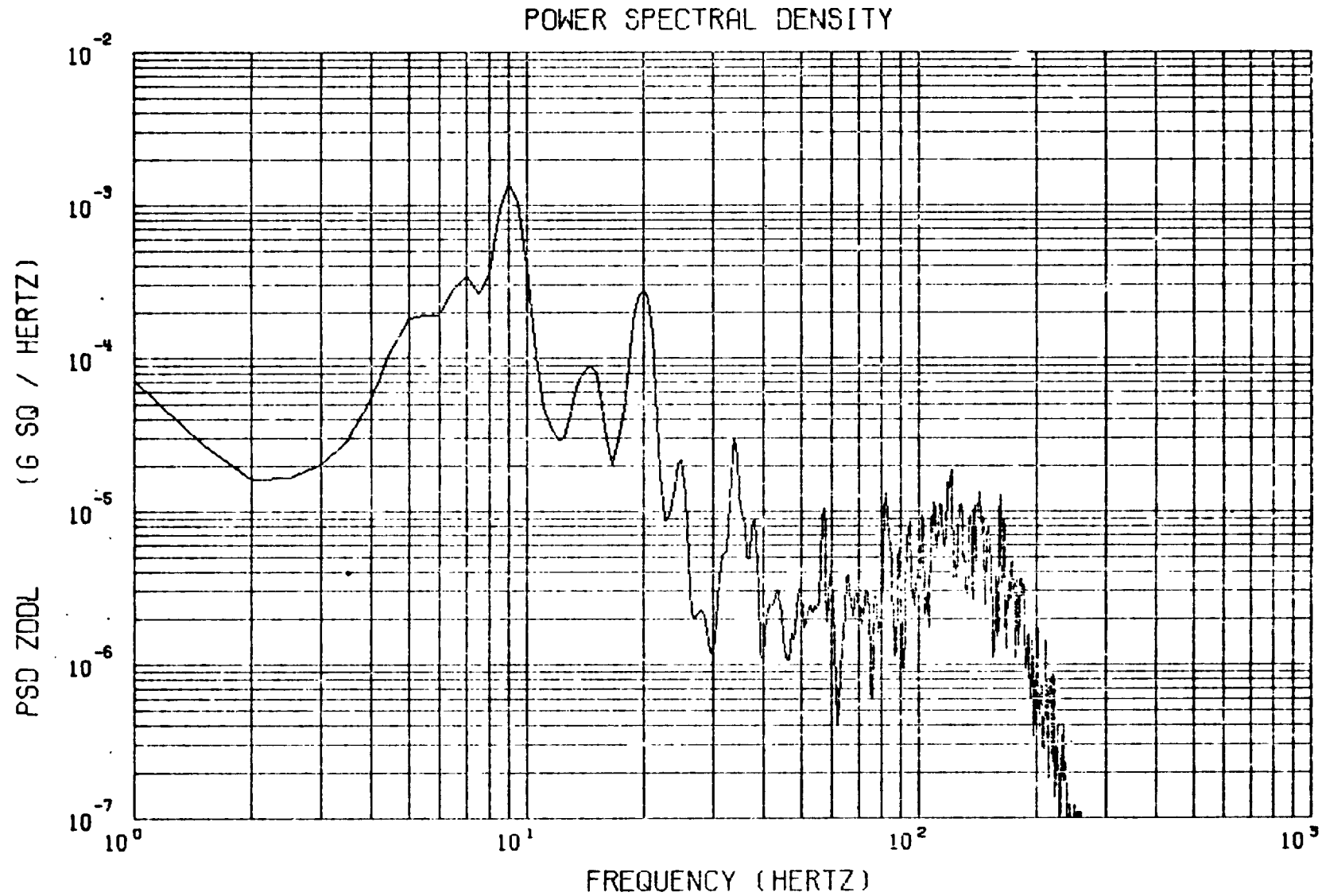
VIKING B FLT (CIF)

STAGE 0 IGN - 3

ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.32a



ΔF = .500 START = 67144.200 SEC STOP = 67146.199 SEC

MEAN = 19554 x 10^{-9} σ^2 = 50535 x 10^{-7} σ = 71088 x 10^{-5} 3σ = 21326 x 10^{-5}

VIKING B FLT (C1F) STAGE O IGN - 3 . ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/25/75

Figure 4.32b

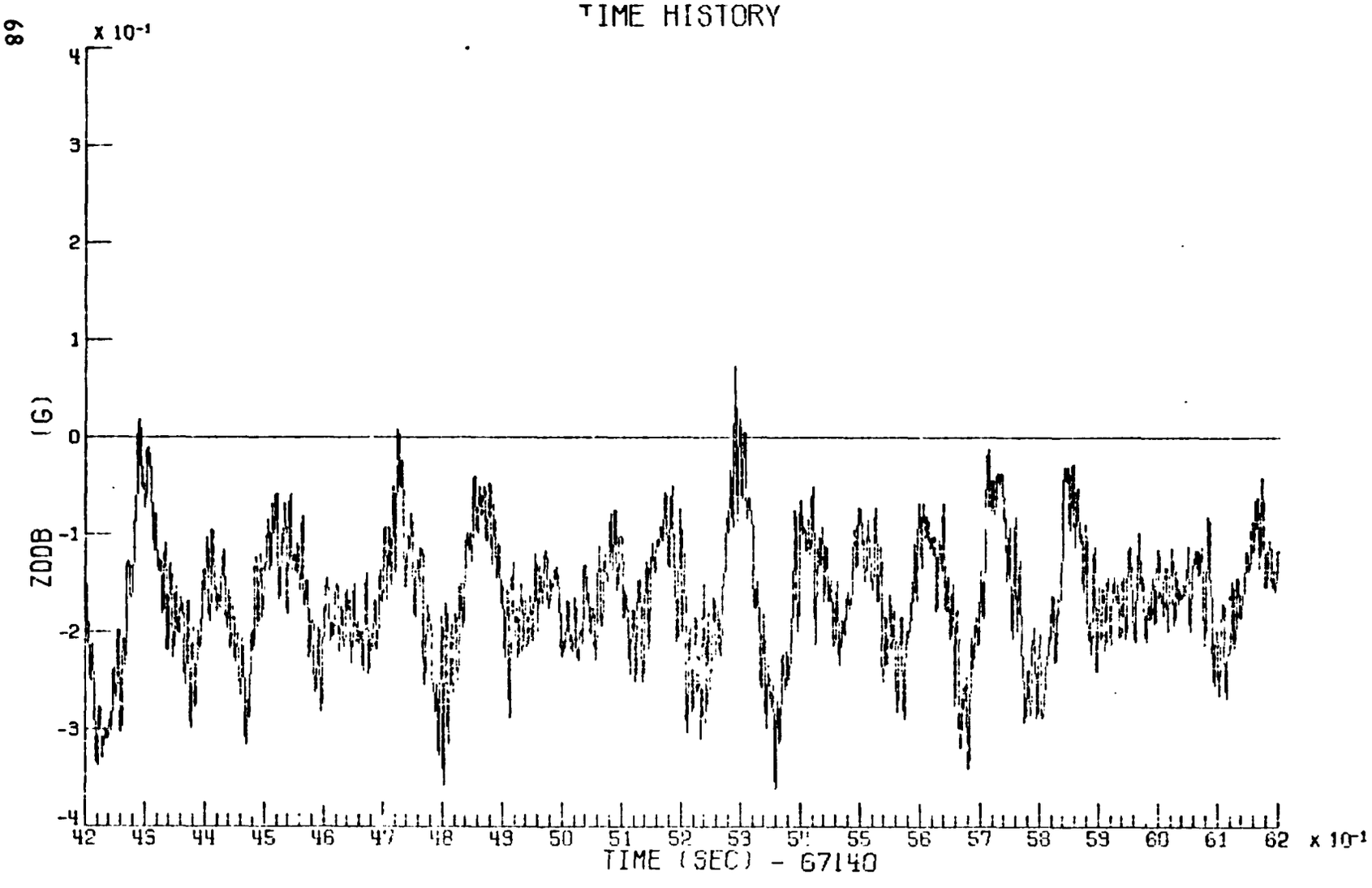
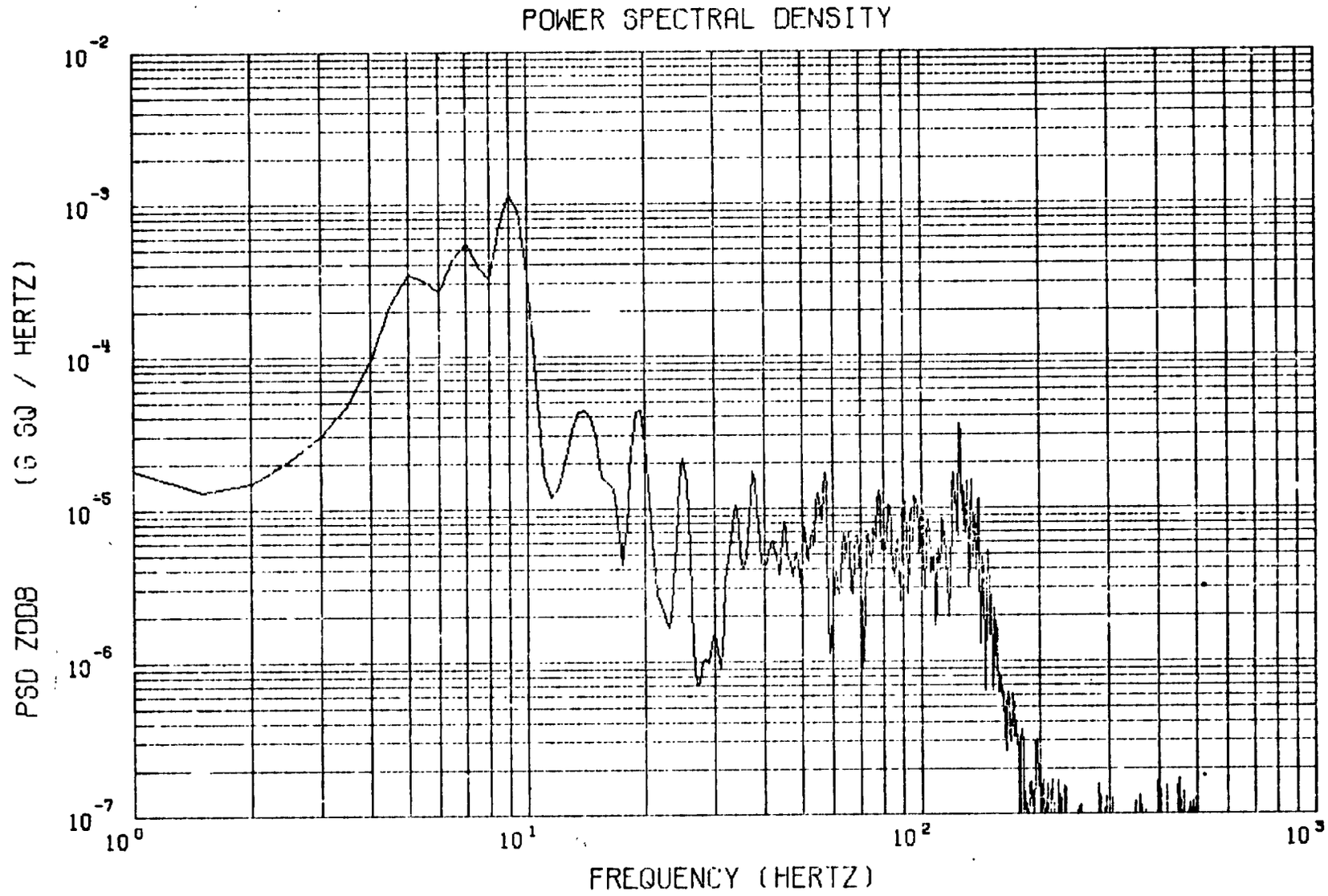

TIME HISTORY
89
X 10⁻¹
4
3
2
1
0
-1
-2
-3
-4
ZOOB (G)
42 43 44 45 46 47 48 49 50 51 52 53 5! 55 56 57 58 59 60 61 62 X 10⁻¹
TIME (SEC) - 67140
MAX = .071
MIN = -.359
VIKING B FLT (C)F1
STAGE 0 IGN - S
ZOOB

Figure 4.33a



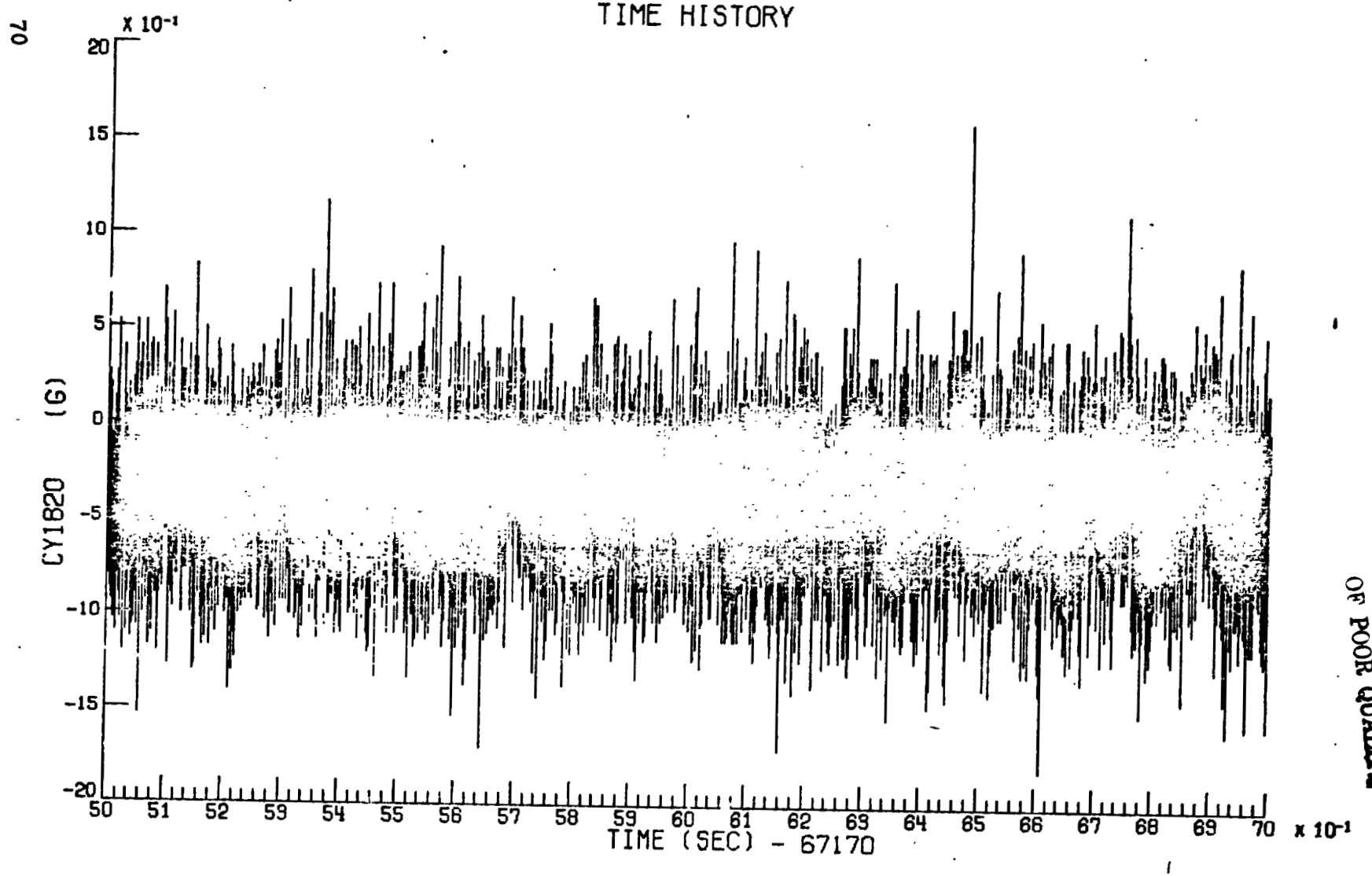
ΔF = .500 START = 67144.200 SEC STOP = 67146.199 SEC

MEAN = -16554×10^{-5} $\sigma^2 = 42742 \times 10^{-7}$ $\sigma = 65377 \times 10^{-6}$ $3\sigma = 19613 \times 10^{-5}$

VIKING B FLT (CIF) STAGE O IGN - 3 ZDDB

NASA-LANGLEY STAGE ANALYSIS PROGRAM 09/23/75

Figure 4.33b



MAX = 1.600

MIN = -1.801

VIKING B FLT (CIF)

MAX Q - 1

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4. 34a

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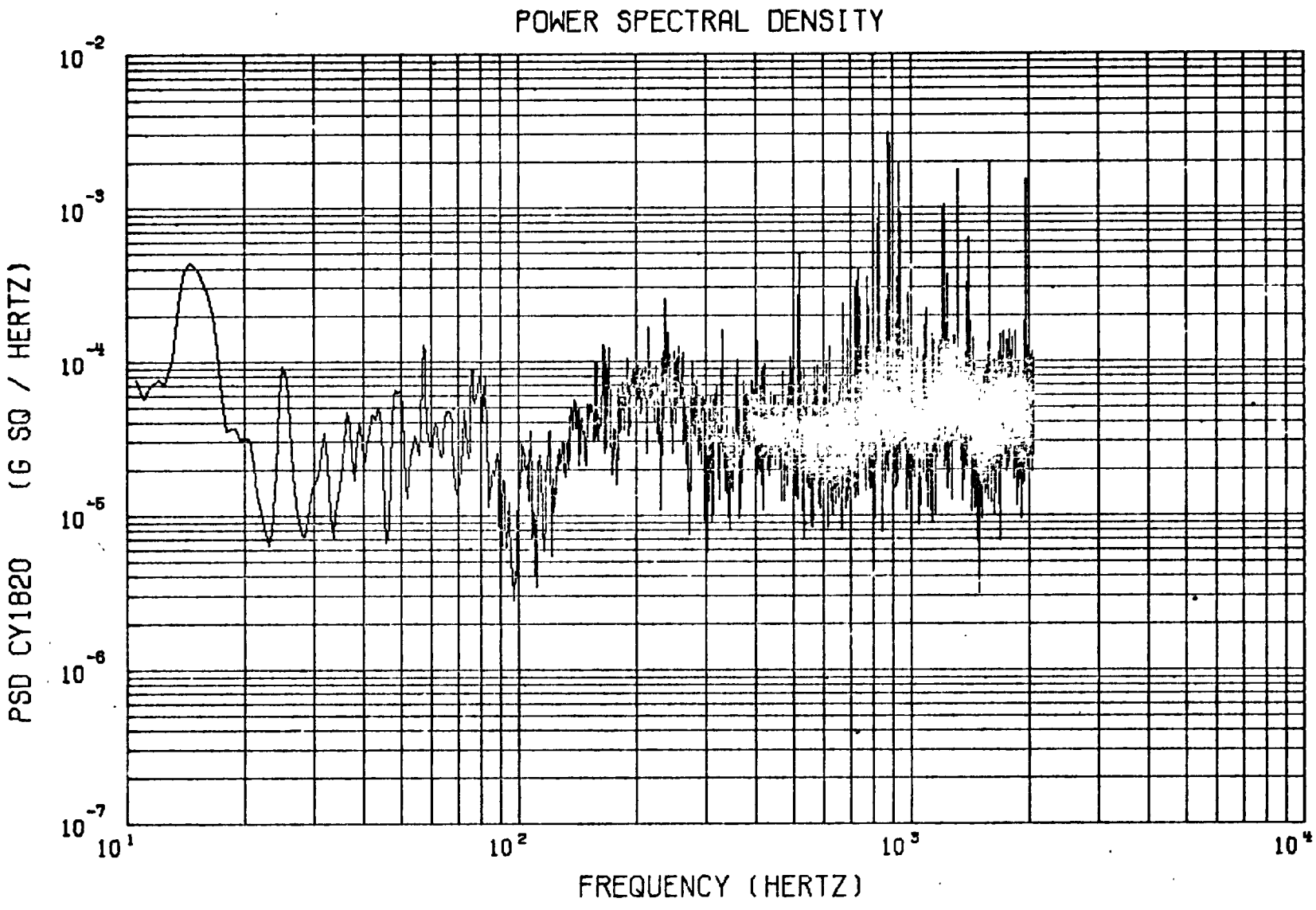


ΔF = .499 START = 67175.000 SEC STOP = 67177.000 SEC

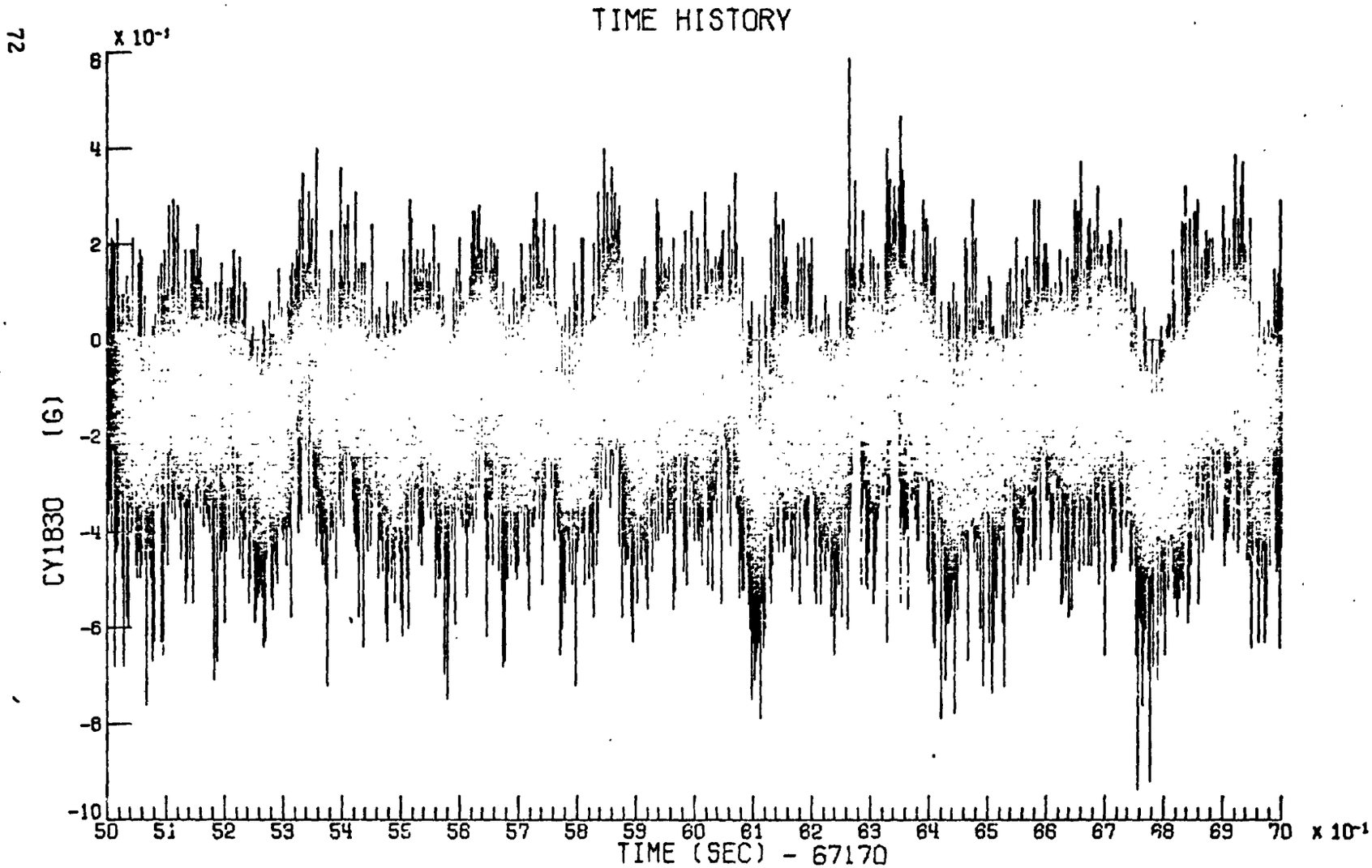
MEAN = -32126×10^{-5} $\sigma^2 = 12916 \times 10^{-5}$ $\sigma = 35938 \times 10^{-5}$ $3\sigma = 10781 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 1 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.34b



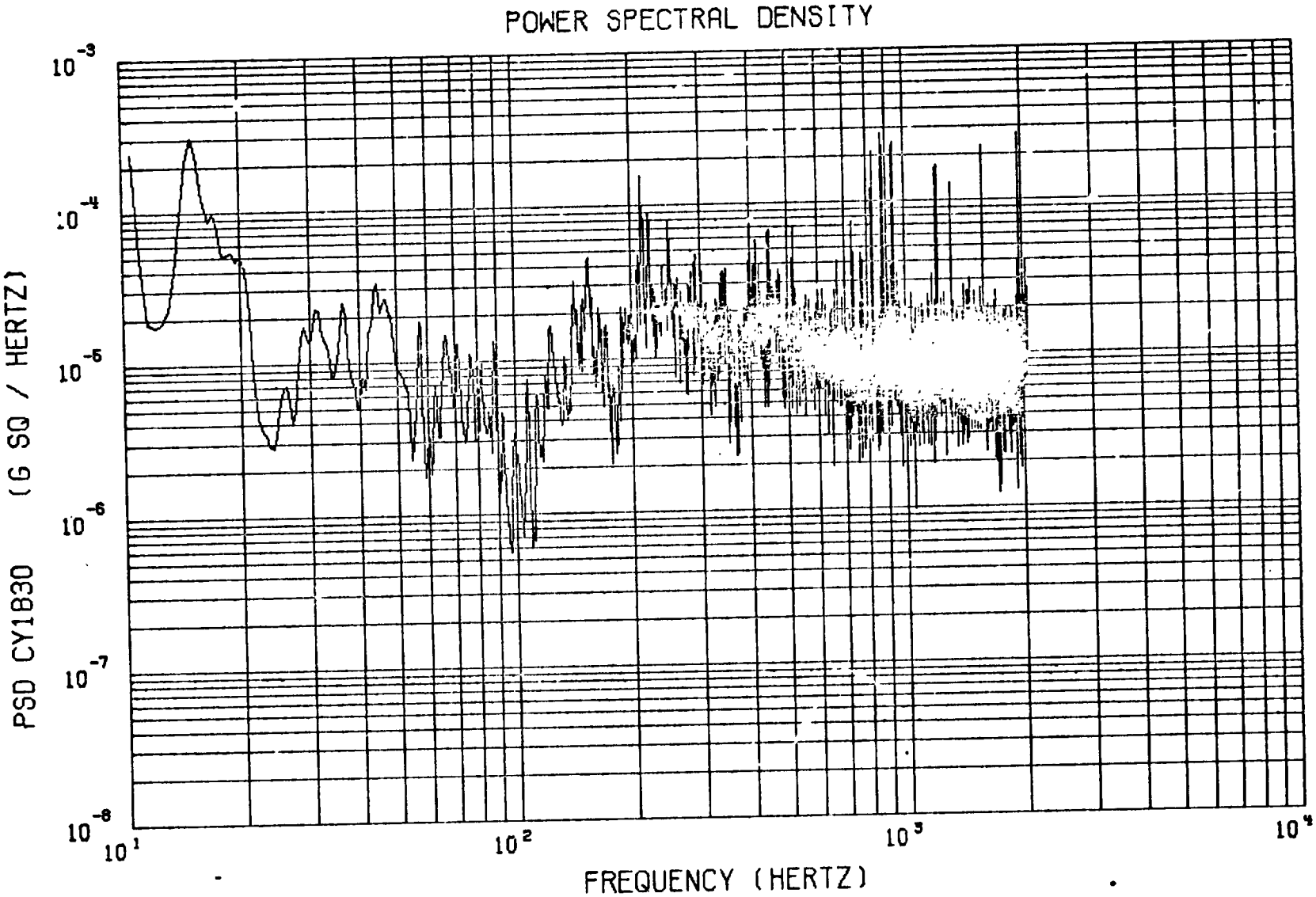
MAX = .587 MIN = -.934

VIKING B FLT (CIF) MAX Q - 1 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.35a



ΔF = .499 START = 67175.000 SEC STOP = 67177.000 SEC

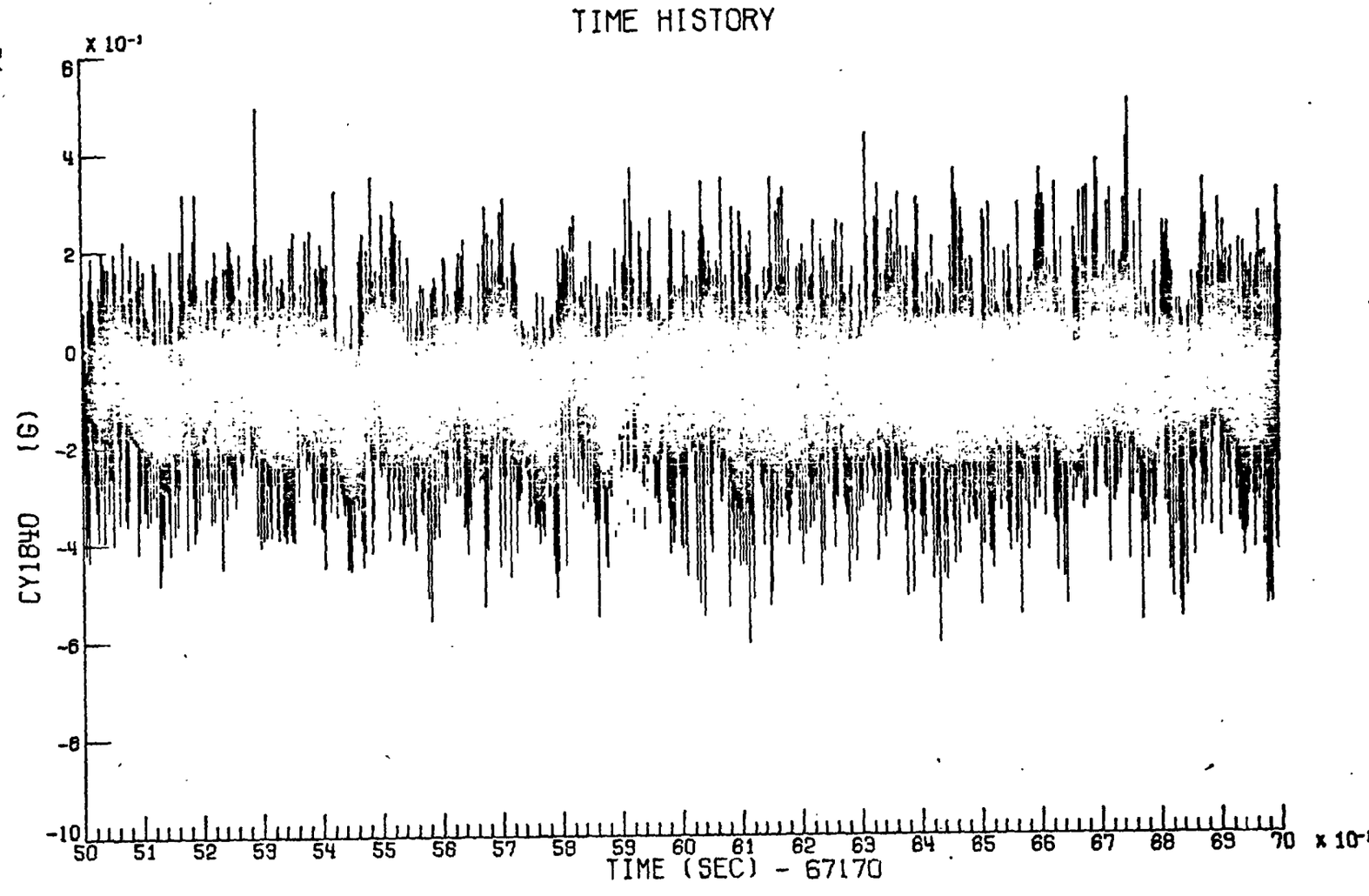
MEAN = -14663×10^{-5} $\sigma^2 = 30944 \times 10^{-5}$ $\sigma = 17591 \times 10^{-5}$ $3\sigma = 52773 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 1 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.35b



MAX = .500 MIN = -.606

VIKING B FLT (CIF) MAX Q - 1 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.36a

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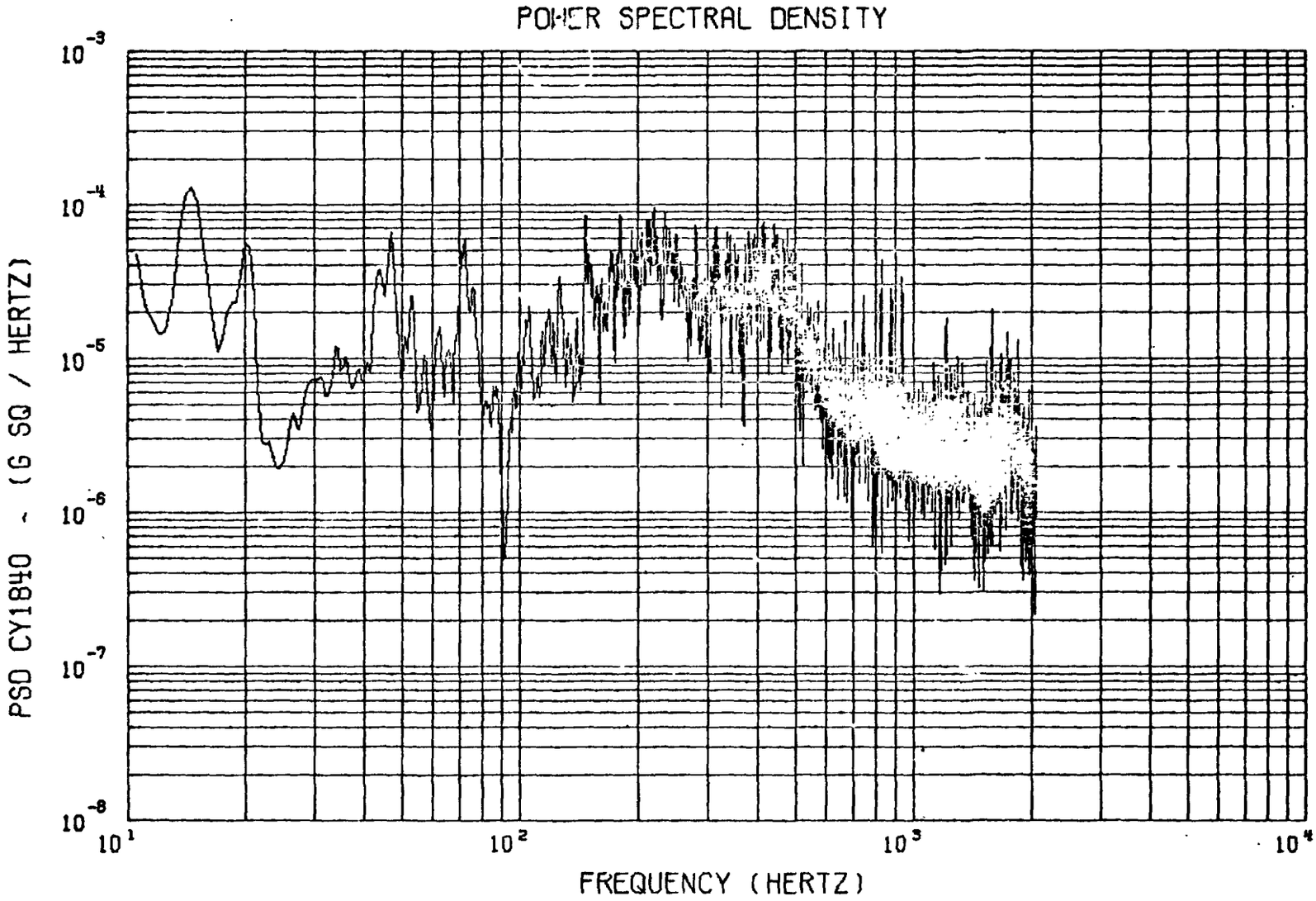


ΔF = .499 START = 67175.000 SEC STOP = 67177.000 SEC

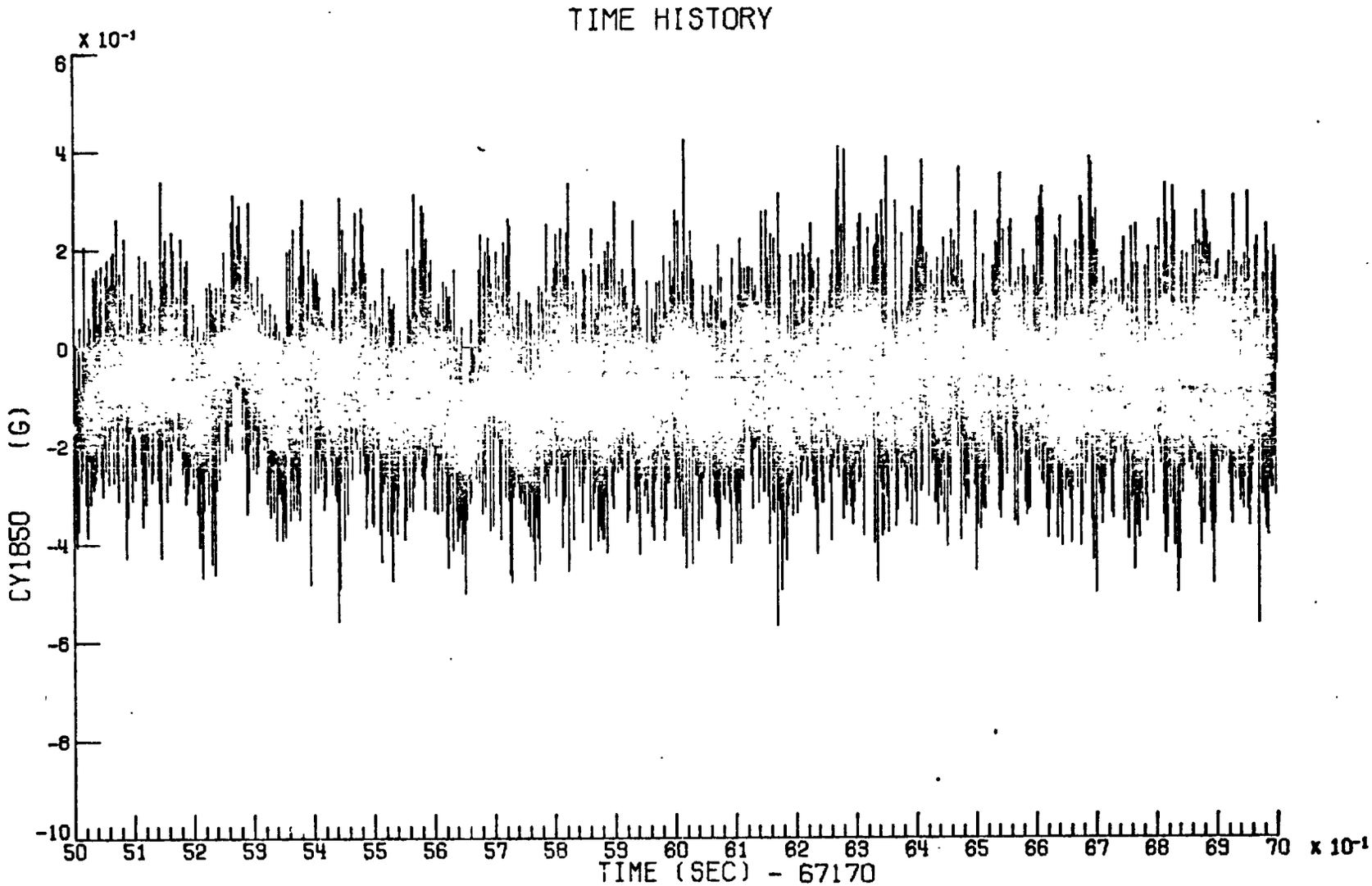
MEAN = -82466 x 10^{-6} σ^2 = 20791 x 10^{-6} σ = 14419 x 10^{-6} 3σ = 43267 x 10^{-6}

VIKING B FLT (CIF) MAX Q - 1 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.36b



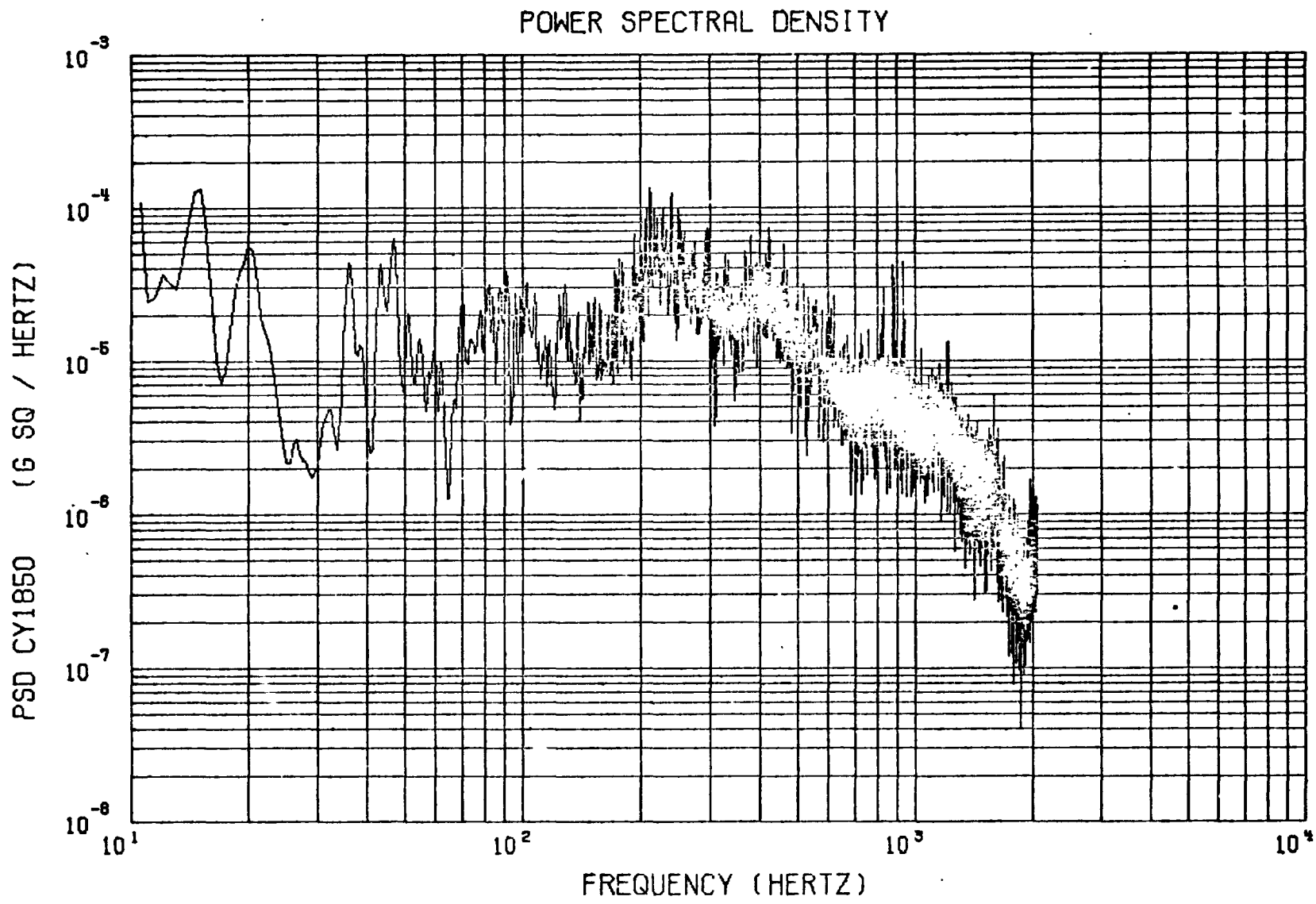
MAX = .422 MIN = -.567

VIKING B FLT (CIF) MAX Q - 1 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.37a



ΔF = .499 START = 67175.000 SEC STOP = 67177.000 SEC

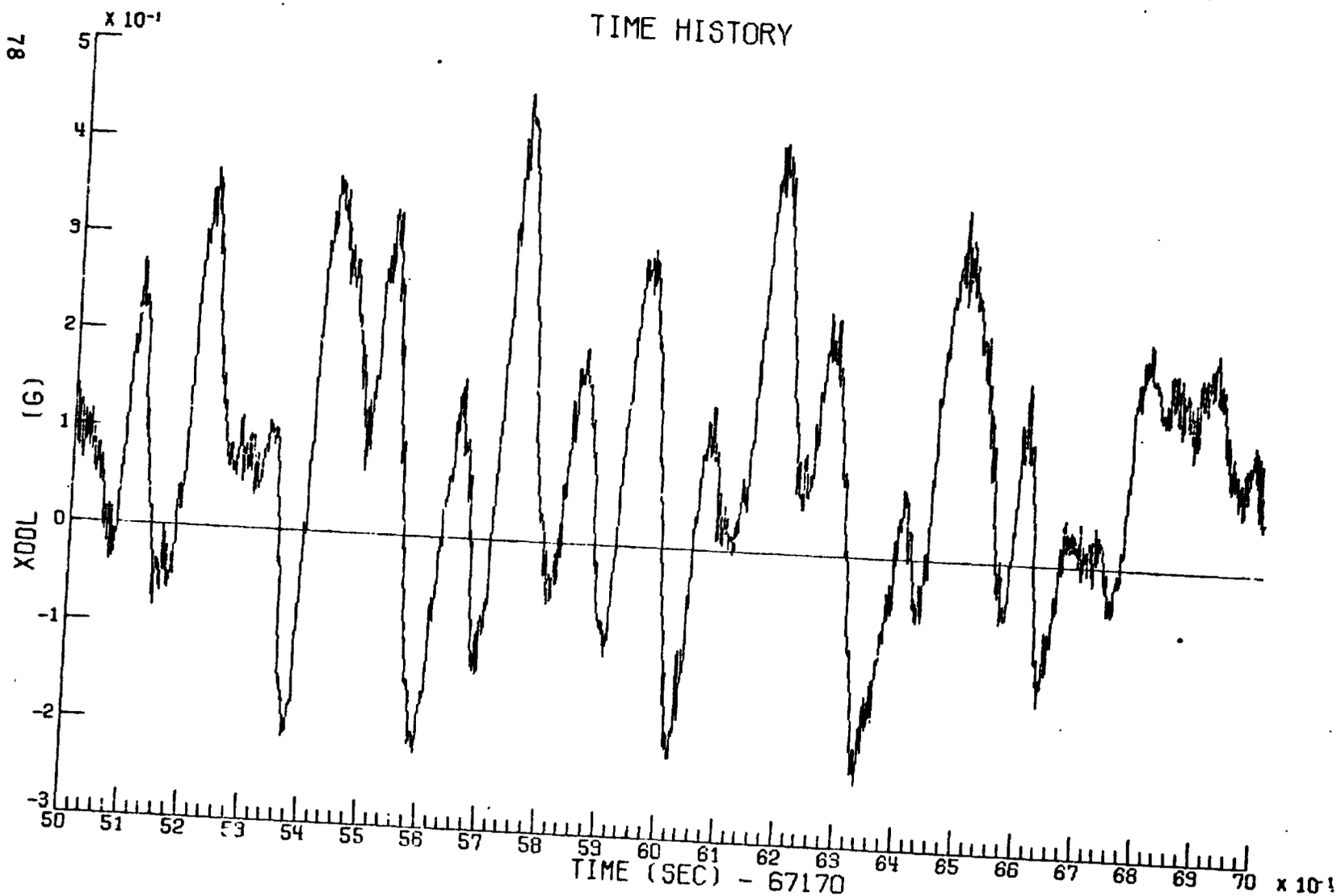
MEAN = -60166 x 10^{-6} σ^2 = 19088 x 10^{-6} σ = 13815 x 10^{-6} 3σ = 41447 x 10^{-6}

VIKING B FLT (CIF) MAX Q - 1 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.37b



MAX = .459

MIN = -.234

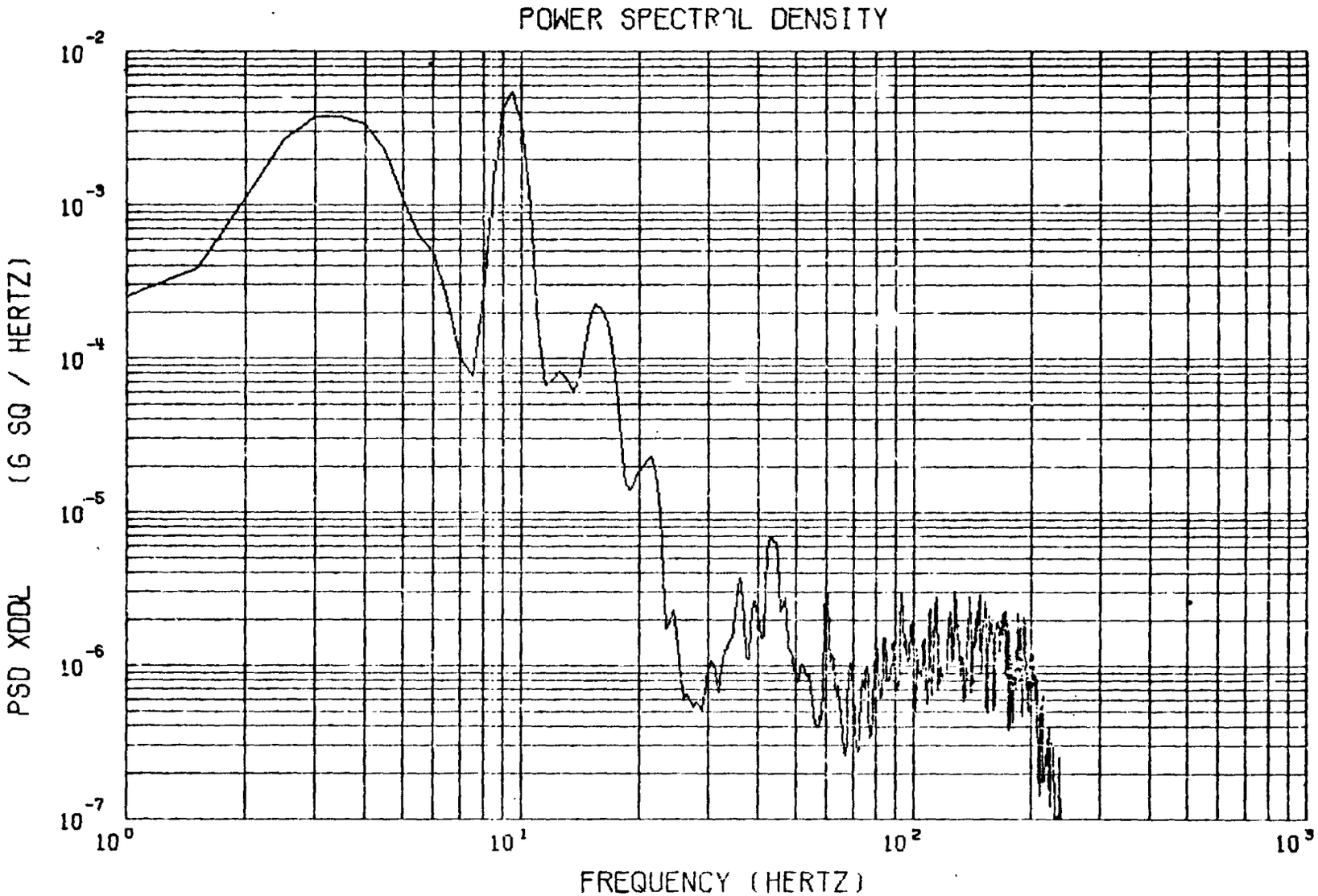
VIKING B FLT (CIF)

MAX Q - 1

XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.38a



ΔF = .500 START = 67175.000 SEC STOP = 67177.000 SEC

MEAN = 88893 x 10^{-5} σ^2 = 19456 x 10^{-5} σ = 13948 x 10^{-5} 3σ = 41845 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 1 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.38b

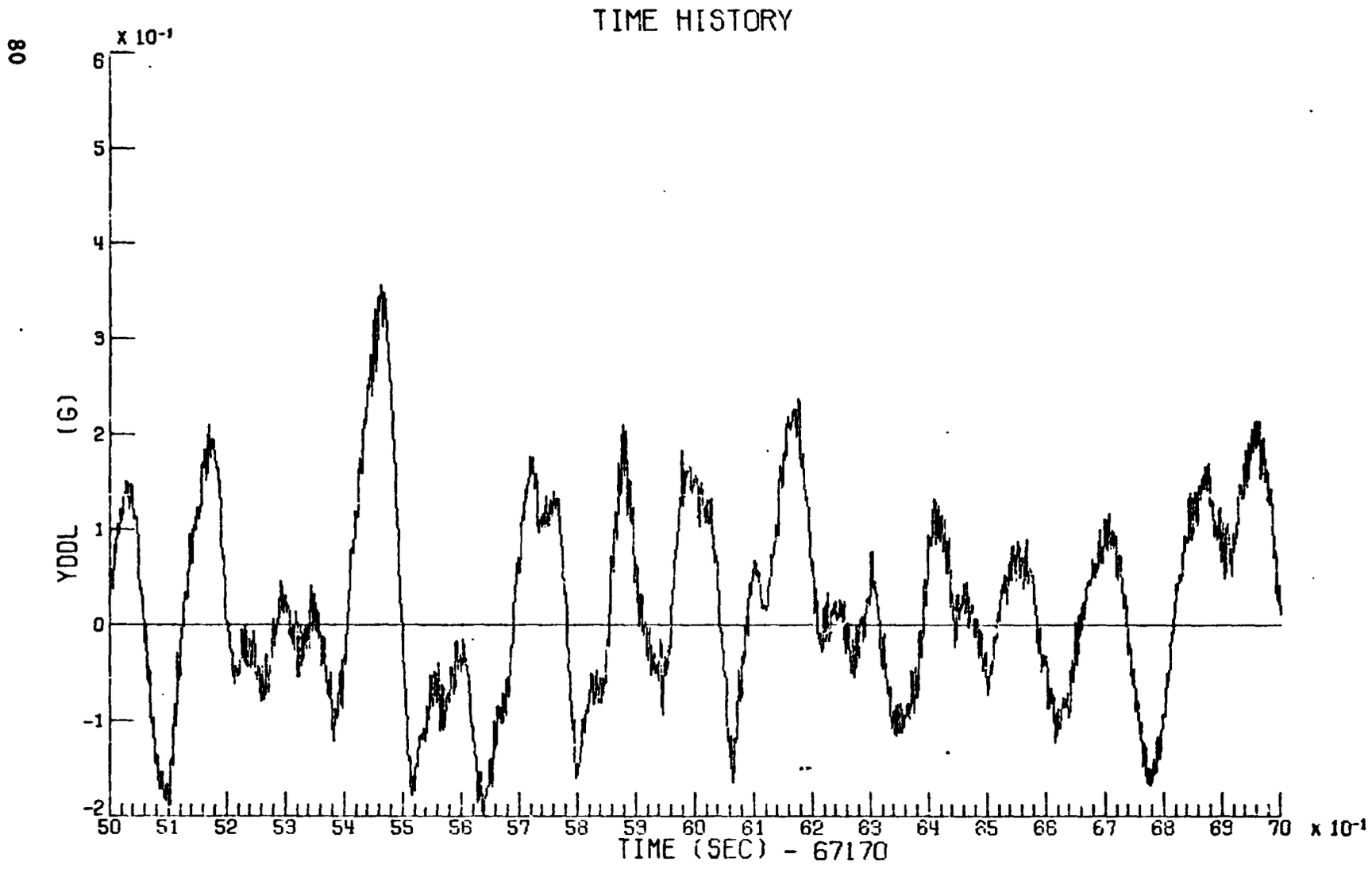
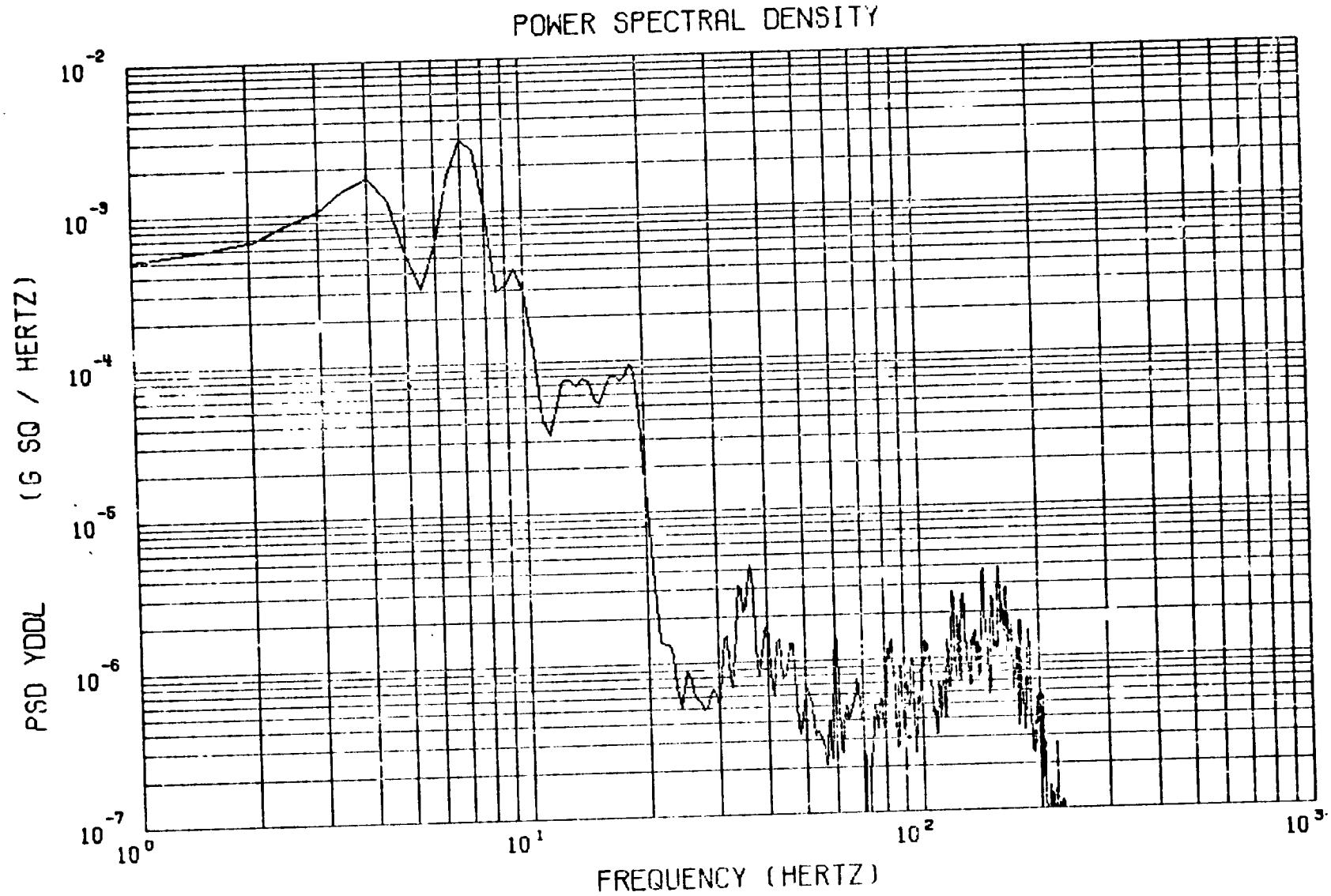

TIME HISTORY
80
X 10⁻¹
6
5
4
3
2
1
0
-1
-2
YDDL (G)
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 X 10⁻¹
TIME (SEC) - 67170
MAX = .355
MIN = -.195
VIKING B FLT (CIF)
MAX Q - 1
YDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.39a



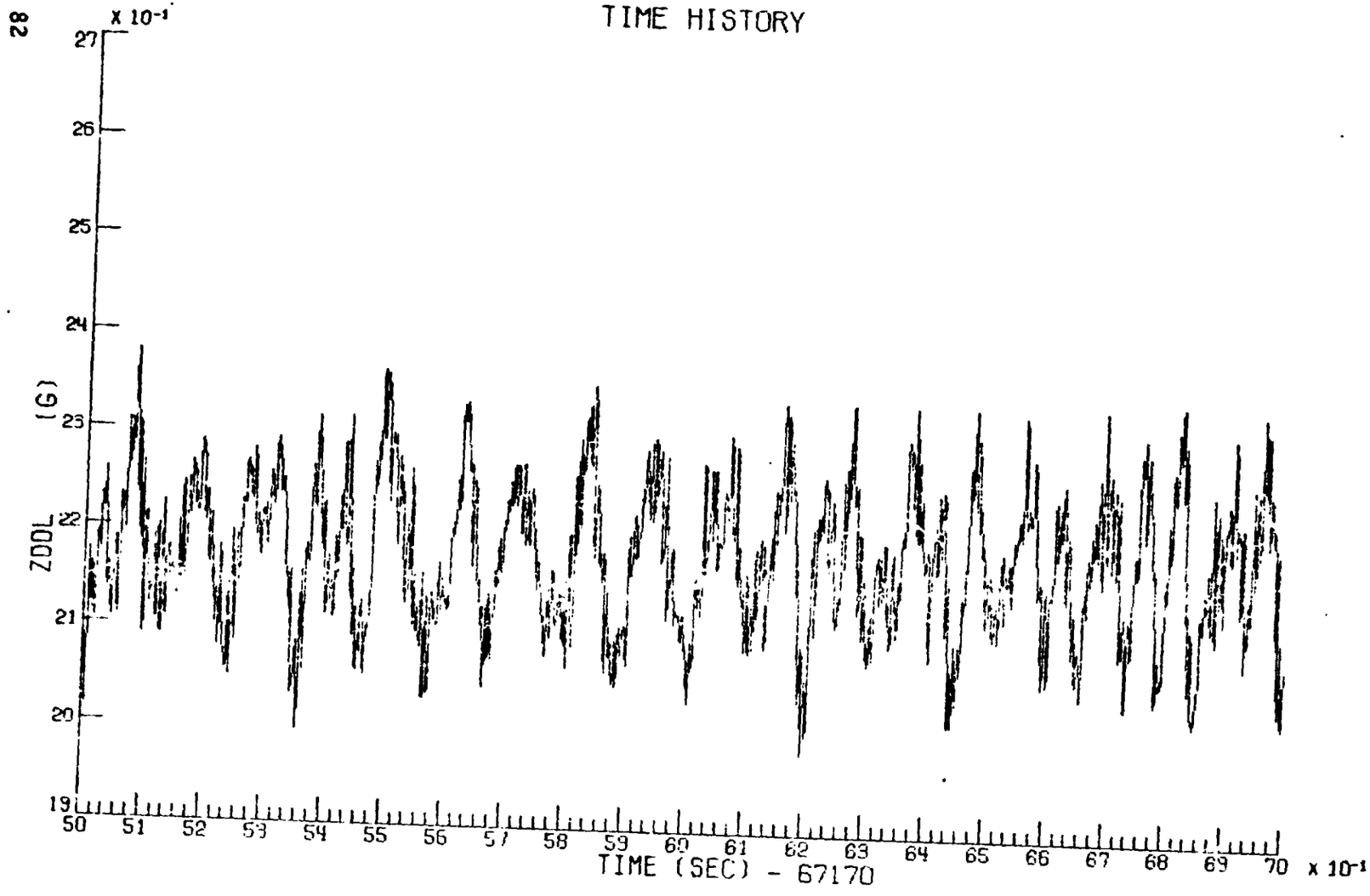
ΔF = .500 START = 67175.000 SEC STOP = 67177.000 SEC

MEAN = 22448 x 10^{-6} σ^2 = 10611 x 10^{-5} σ = 10301 x 10^{-5} 3σ = 30903 x 10^{-5}

VIKING B FLT (CIF) MAX 0 - 1 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.39b



MAX = 2.380

MIN = 1.983

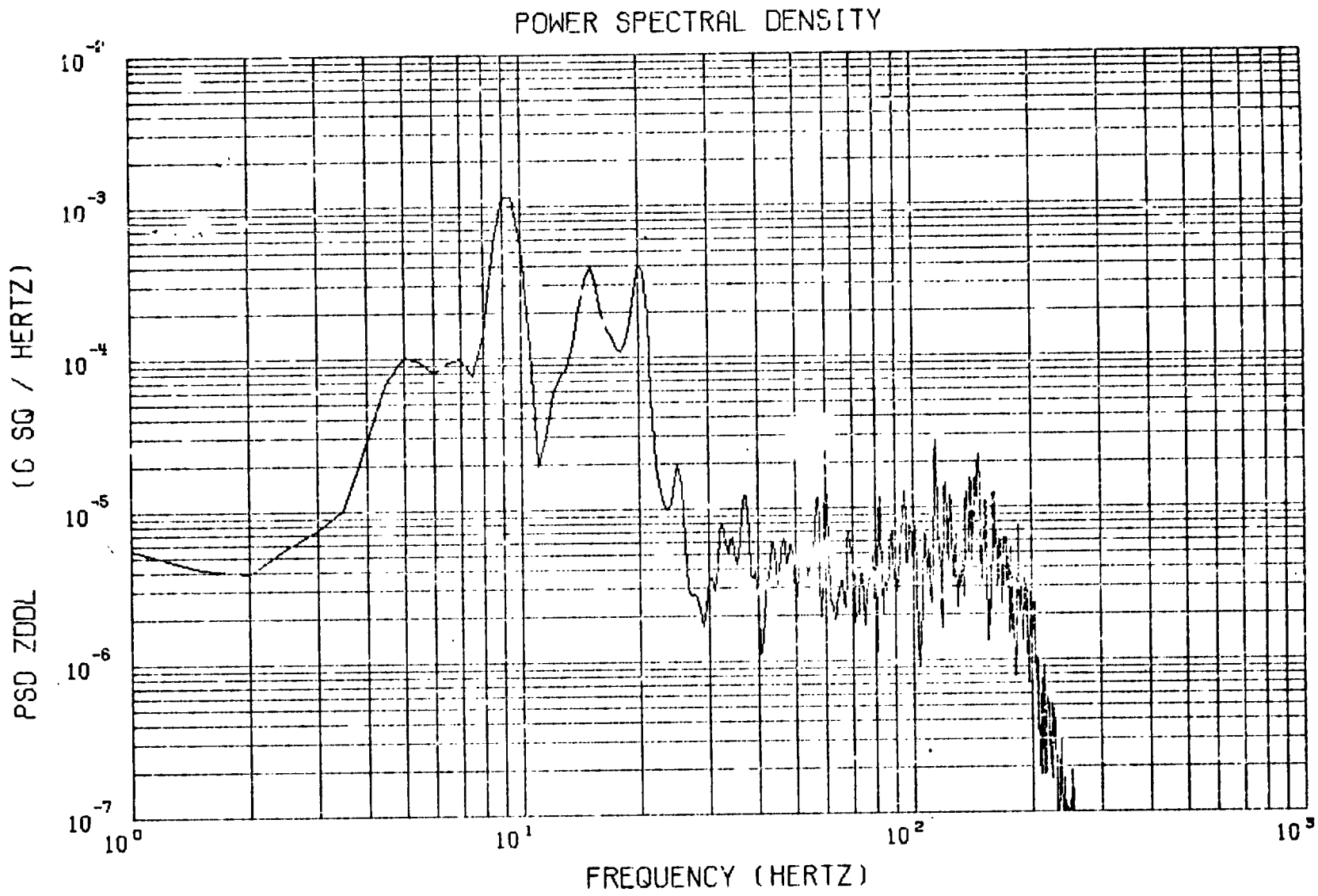
VIKING B FLT (CIF)

MAX Q - 1

ZDOL

NASA LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.40a



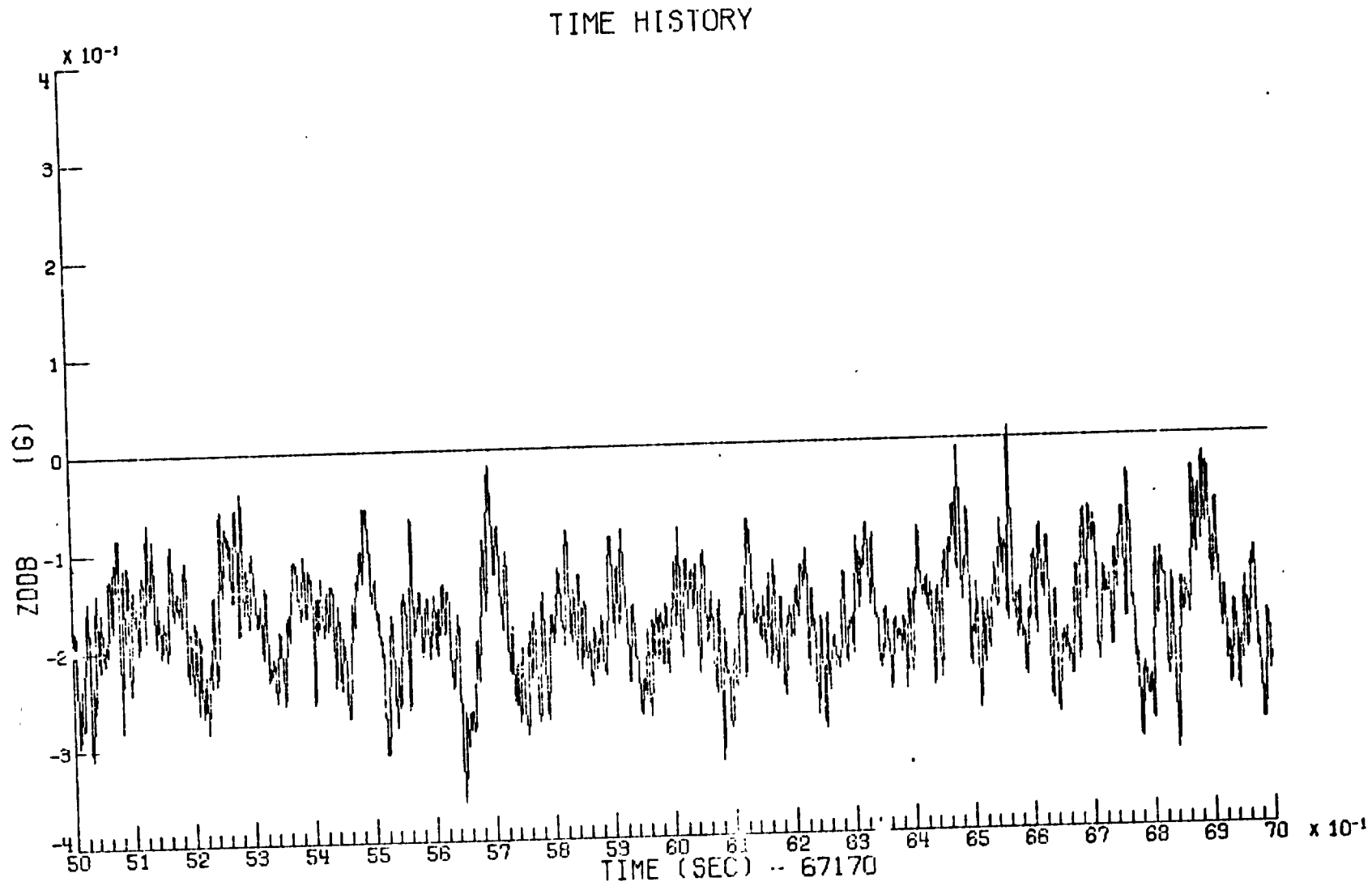
ΔF = .500 START - 67175.000 SEC STOP = 67177.000 SEC

MEAN = 21808 x 10^{-6} σ^2 = 51262 x 10^{-7} σ = 71597 x 10^{-5} 3σ = 21479 x 10^{-5}

VIKING B FLT (CIF) MAX Q -- 1 ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.40b



MAX = .010

MIN = -.359

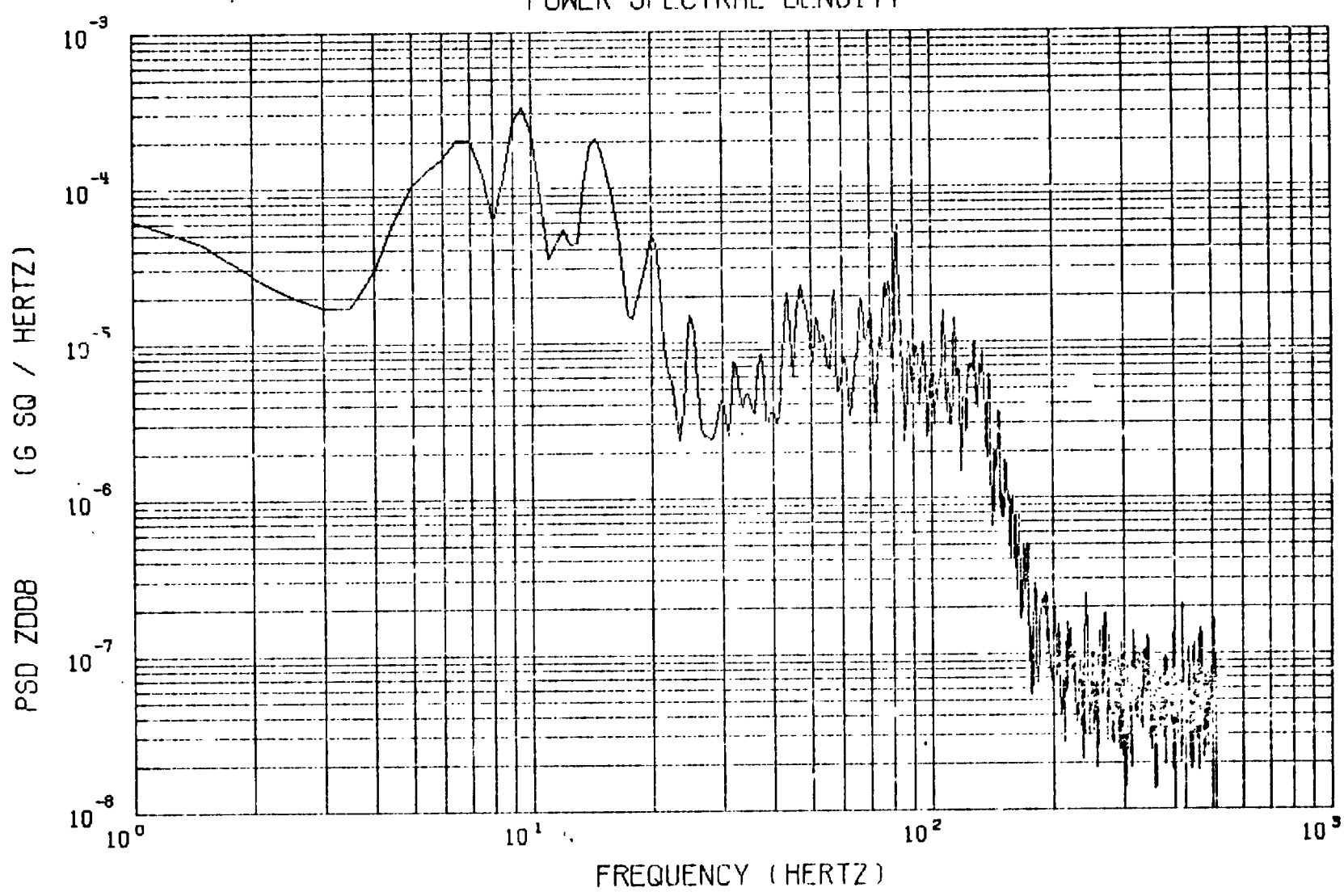
VIKING B FLT (CIF)

MAX Q - 1

ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.4la



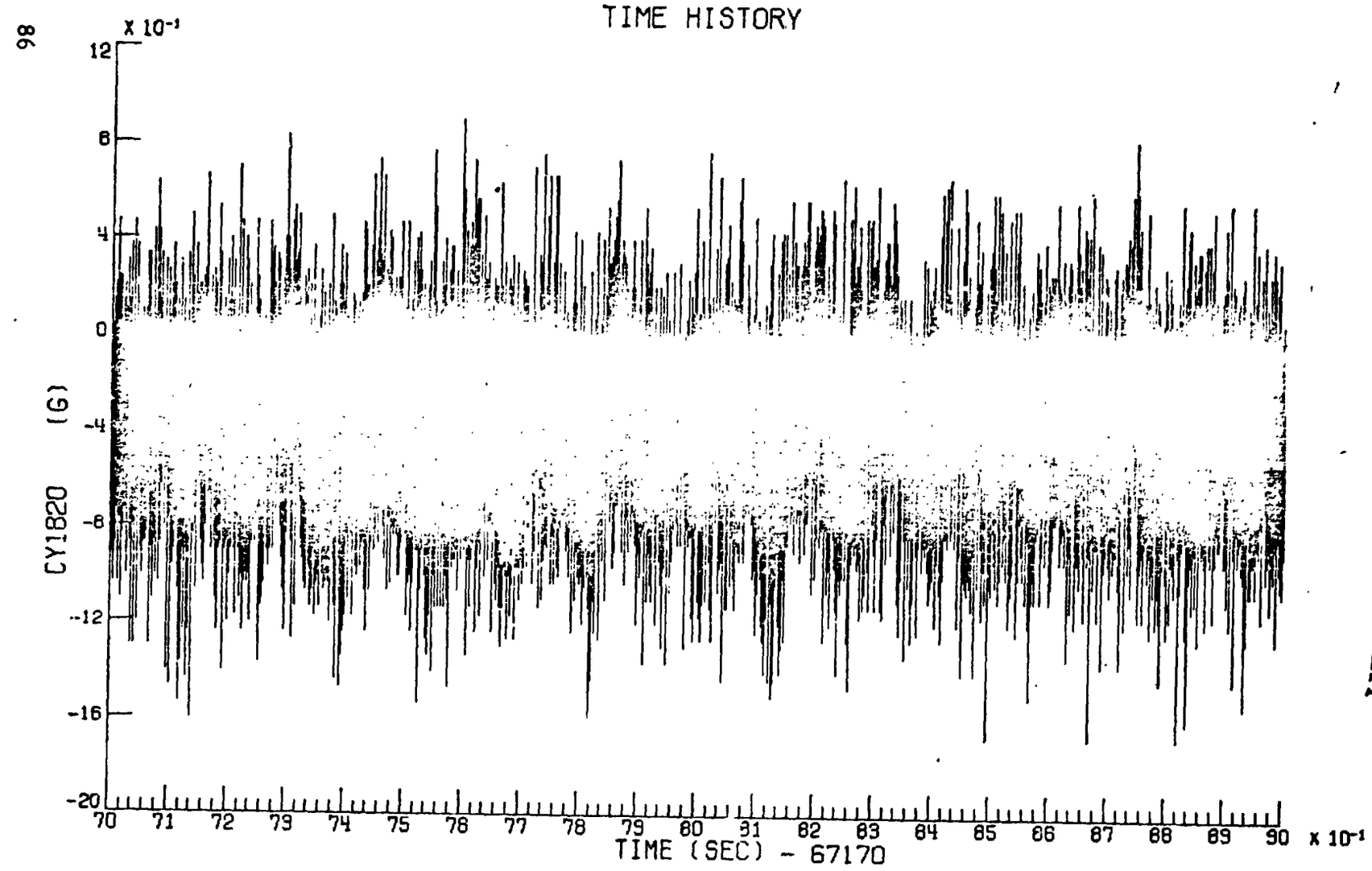
ΔF = .500 START = 67175.000 SEC STOP = 67177.000 SEC

MEAN = -17793 x 10^{-5} σ^2 = 29254 x 10^{-7} σ = 54087 x 10^{-6} 3σ = 16226 x 10^{-5}

VIKING B FLT (CIF) MAX 0 - 1 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.41b



MAX = .900

MIN = -1.667

VIKING B FLT (CIF)

MAX Q - 1.5

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.42a

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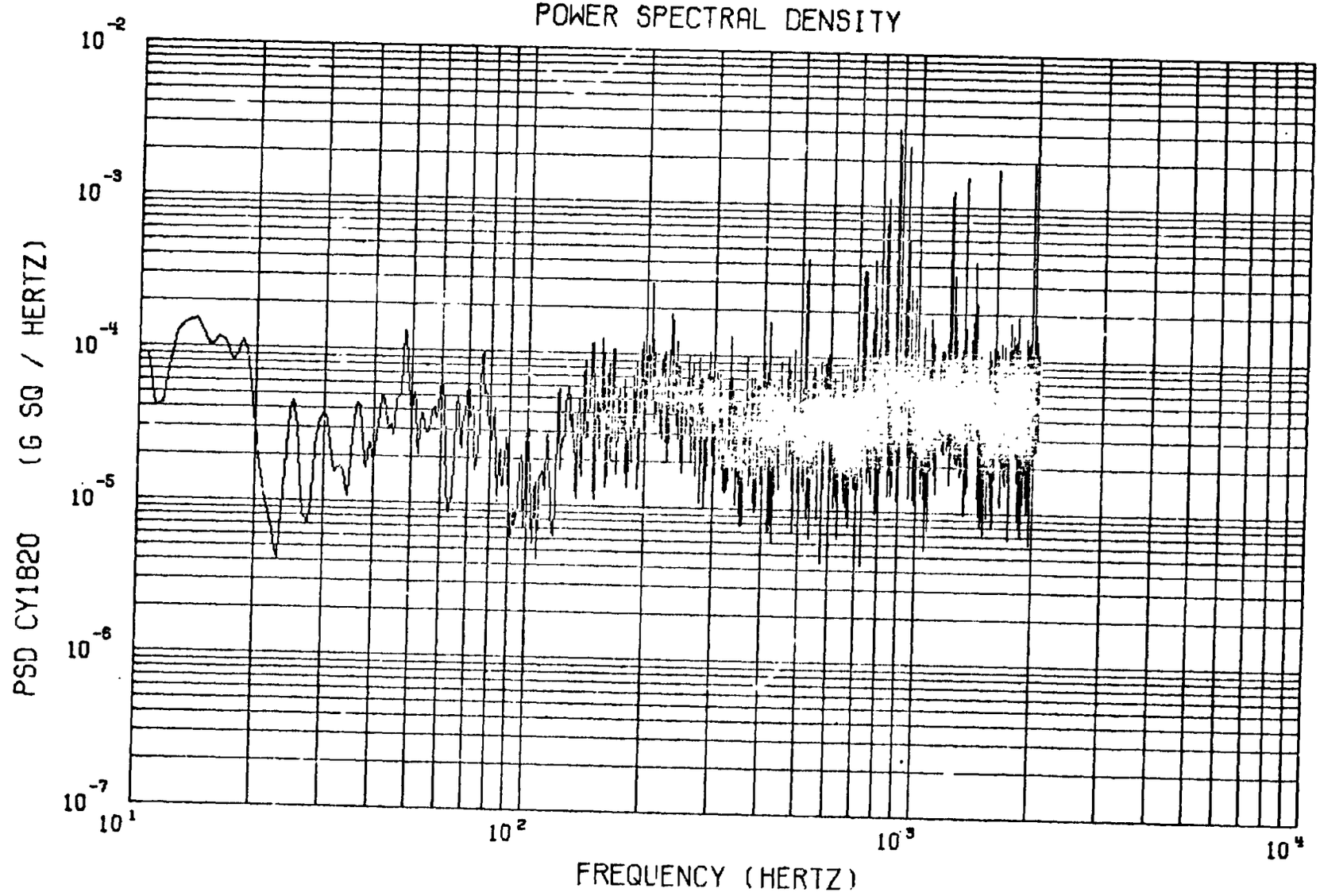


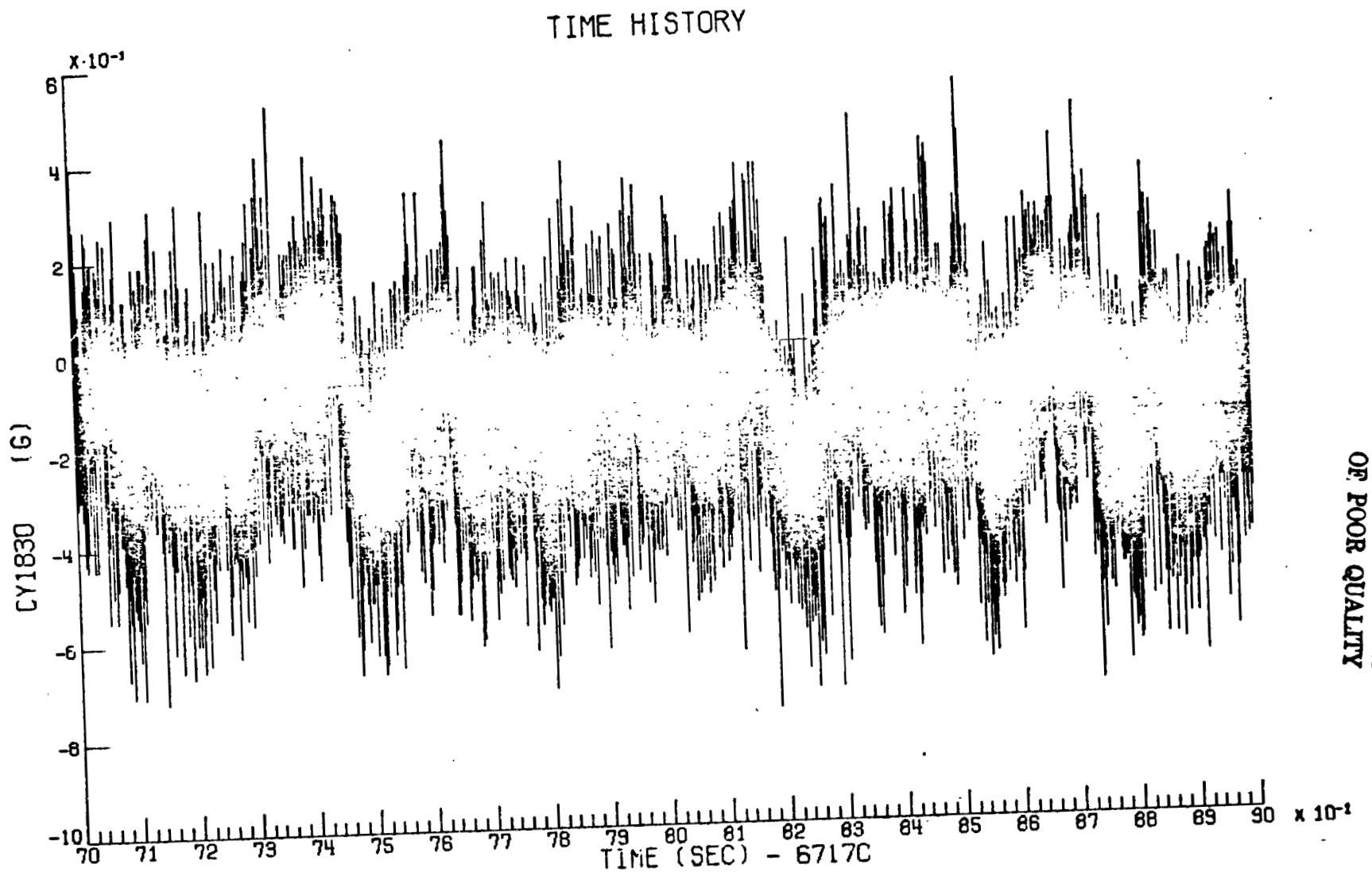
ΔF = .499 START = 67177.000 SEC STOP = 67178.999 SEC

MEAN = -32283×10^{-5} $\sigma^2 = 13022 \times 10^{-5}$ $\sigma = 36086 \times 10^{-5}$ $3\sigma = 10826 \times 10^{-4}$

VIKING B FLT (CIF) MAX Q - 1.5 CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75 4096 SPS

Figure 4.42b



MAX = .534

MIN = -.761

VIKING B FLT (CIF)

MAX Q - 1.5

4096 SPS

CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.43a

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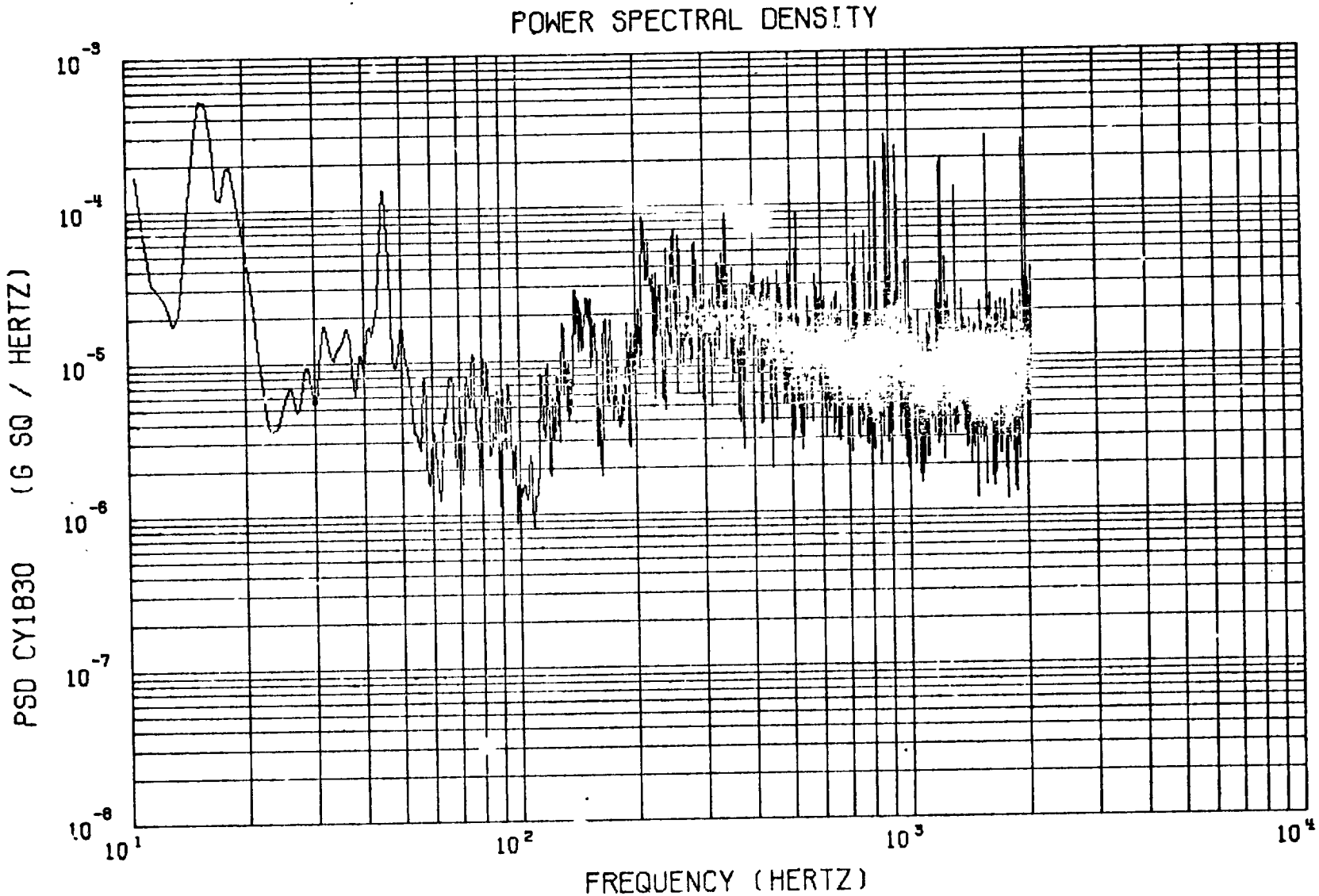


ΔF = .499 START = 67177.000 SEC STOP = 67178.999 SEC

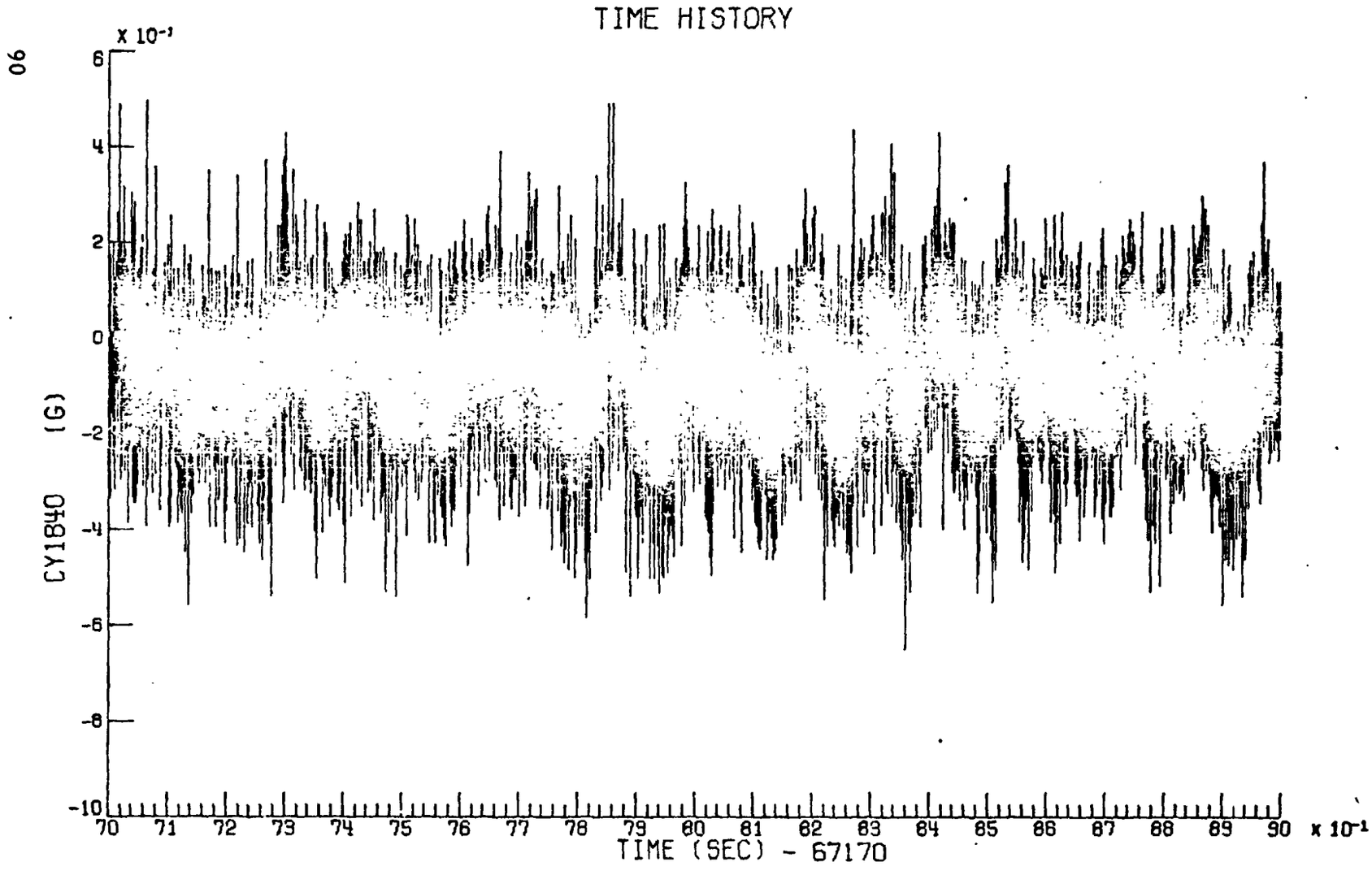
MEAN = -1294×10^{-5} $\sigma^2 = 31124 \times 10^{-5}$ $\sigma = 17642 \times 10^{-5}$ $3\sigma = 52926 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 1.5 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.43b



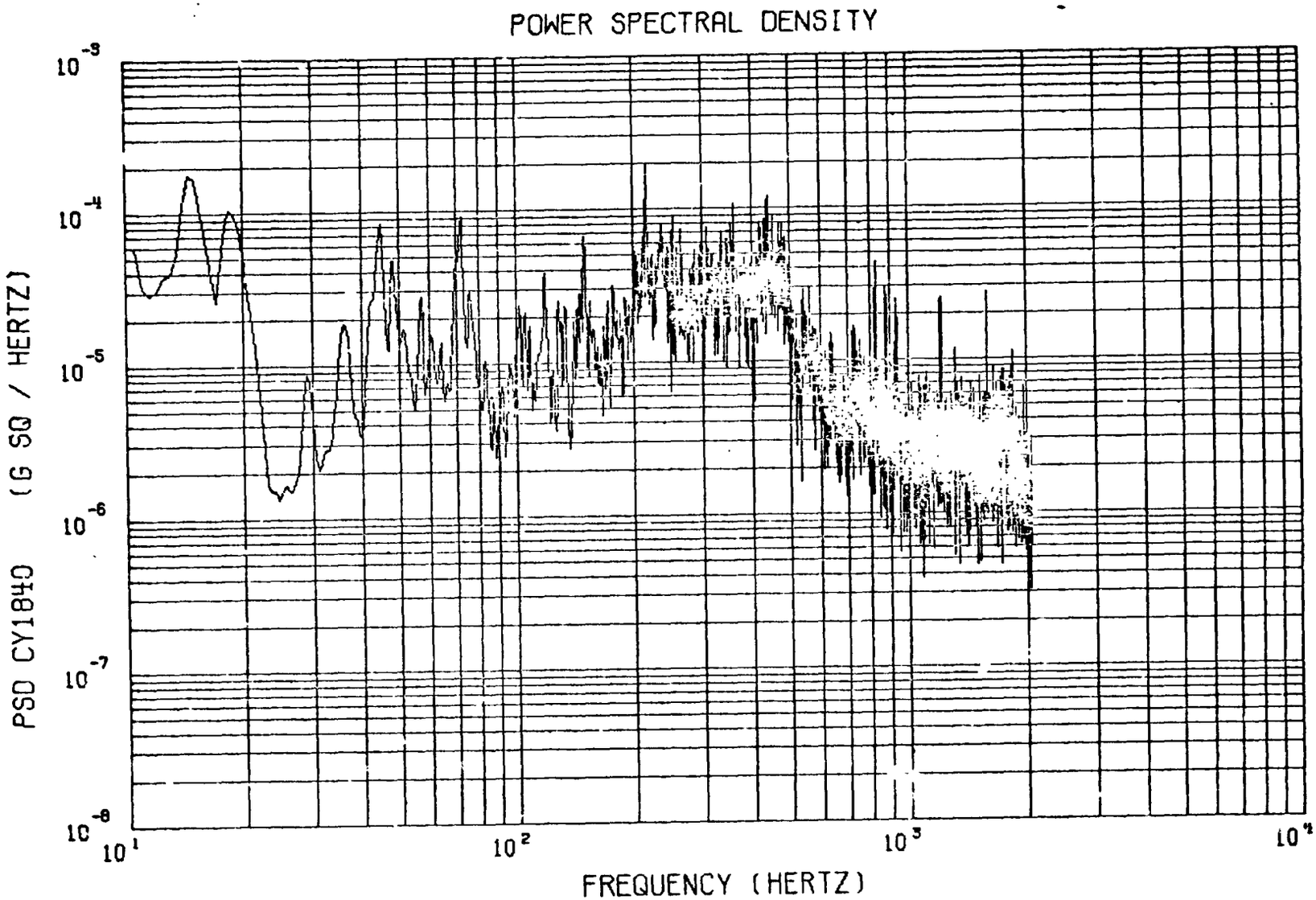
MAX = .494 MIN = -.650

VIKING 8 FLT (CIF) MAX Q - 1.5 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.44a



ΔF = .499 START = 67177.000 SEC STOP = 67178.999 SEC

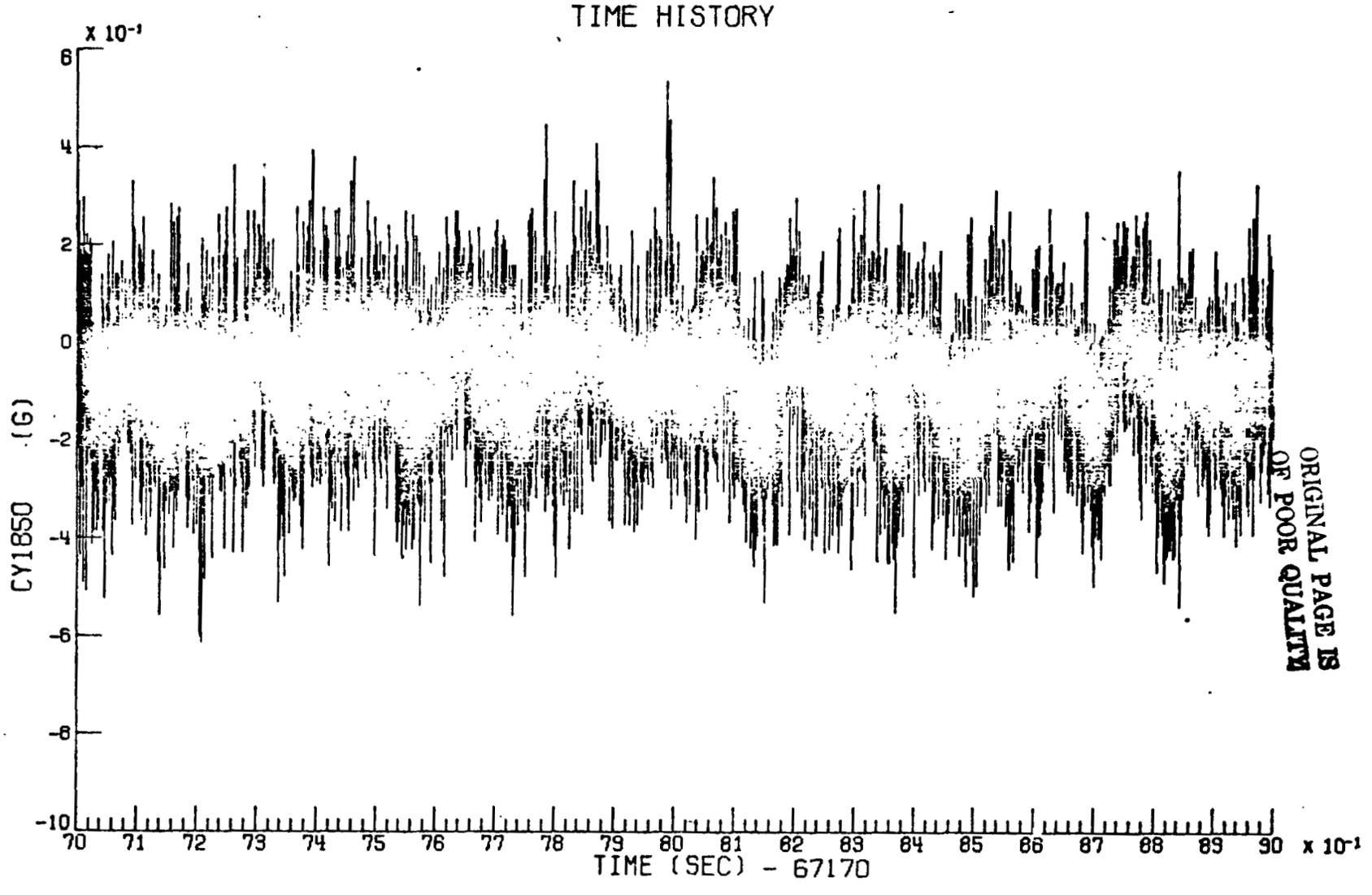
MEAN = -80125 x 10^{-8} σ^2 = 22225 x 10^{-5} σ = 14908 x 10^{-5} 3σ = 44724 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 1.5 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.44b



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MAX = .533

MIN = -.611

VIKING B FLT (CIF)

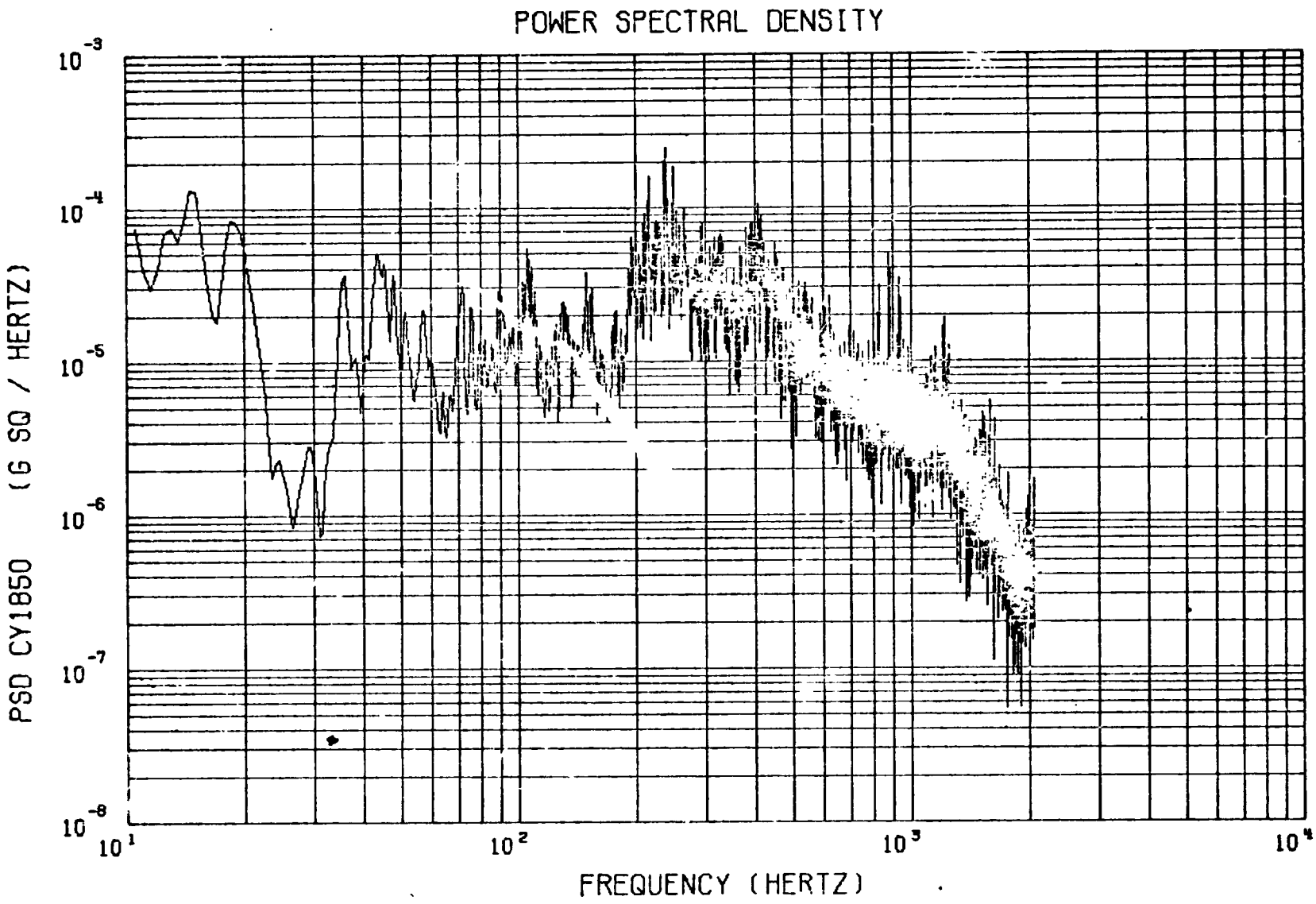
MAX Q - 1.5

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4096 SPS

Figure 4.45a



ΔF = .499 START = 67177.000 SEC STOP = 67178.999 SEC

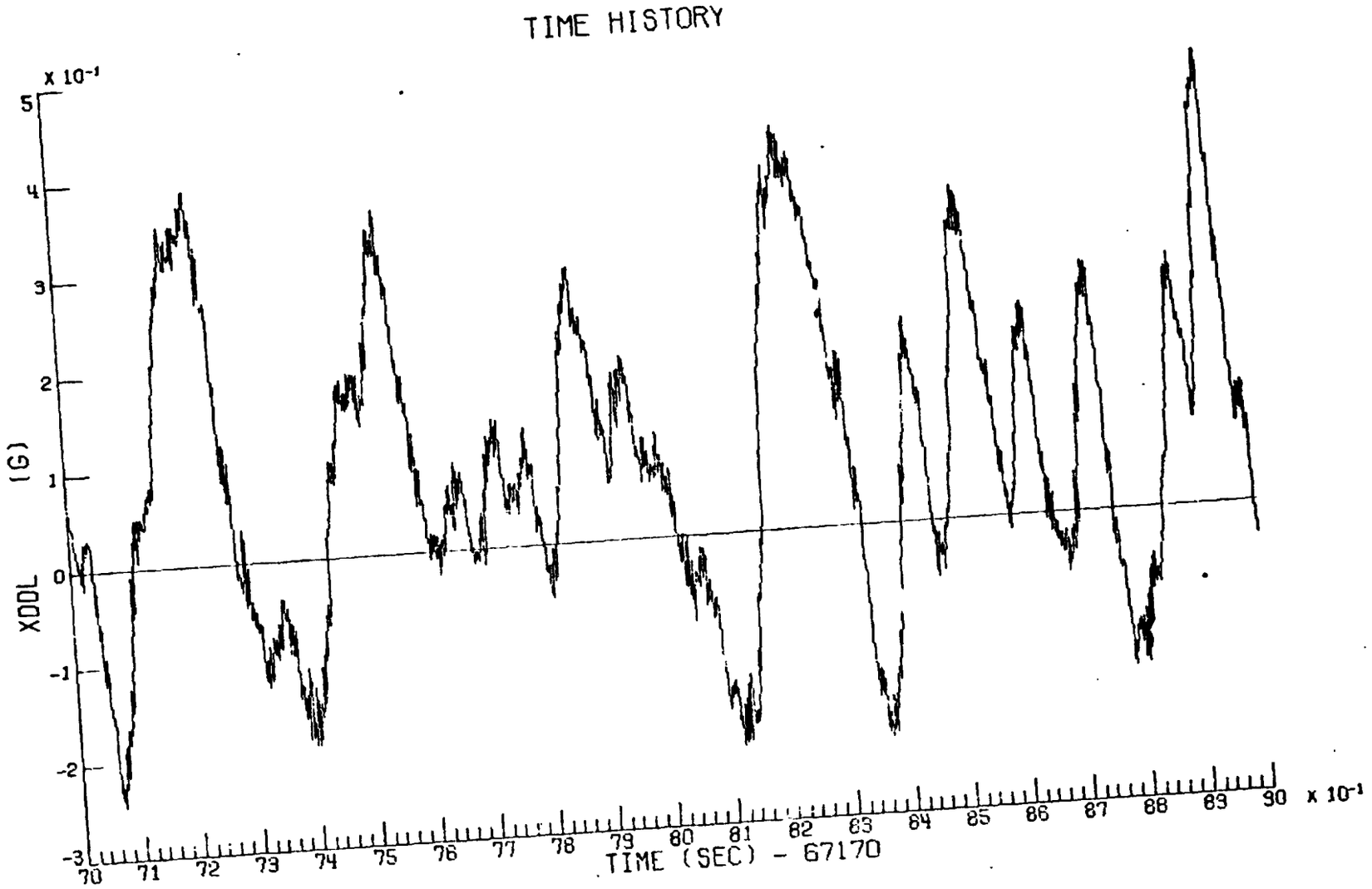
MEAN = -81307 x 10^{-5} σ^2 = 21042 x 10^{-6} σ = 14505 x 10^{-3} 3σ = 43517 x 10^{-3}

VIKING B FLT (CIF) MAX Q - 1.5 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.45b



MAX = .467

MIN = -.244

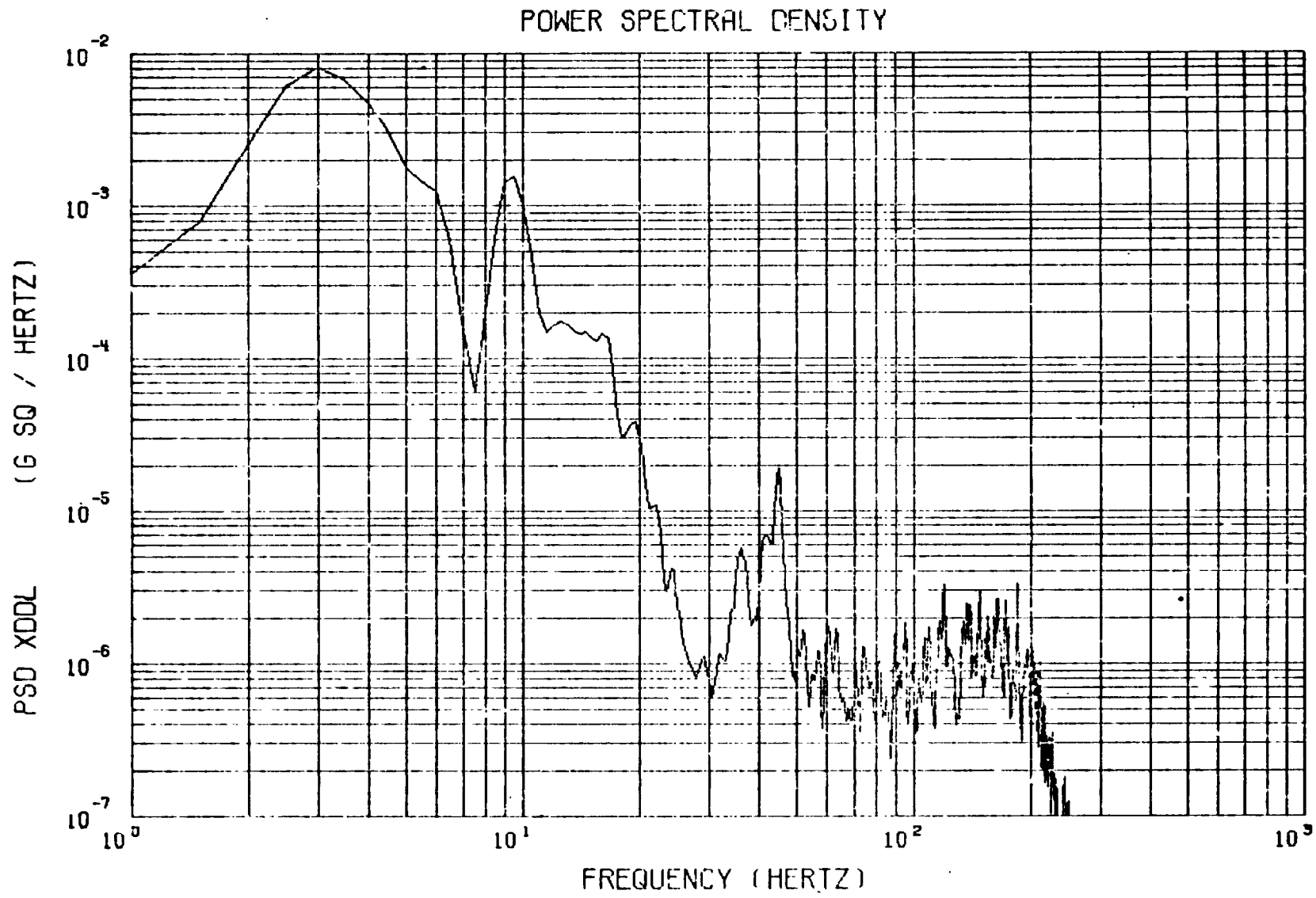
VIKING 2 FLT (CIF)

MAX Q - 1.5

XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.46a



.F = .500 START = 67177.000 SEC STOP = 67178.999 SEC

MEAN = 79566 x 10^{-6} σ^2 = 23273 x 10^{-6} σ = 15255 x 10^{-3} 3σ = 45766 x 10^{-6}

VIKING B FLT (CIF) MAX Q - 1.5 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 05/23/75

Figure 4.46b

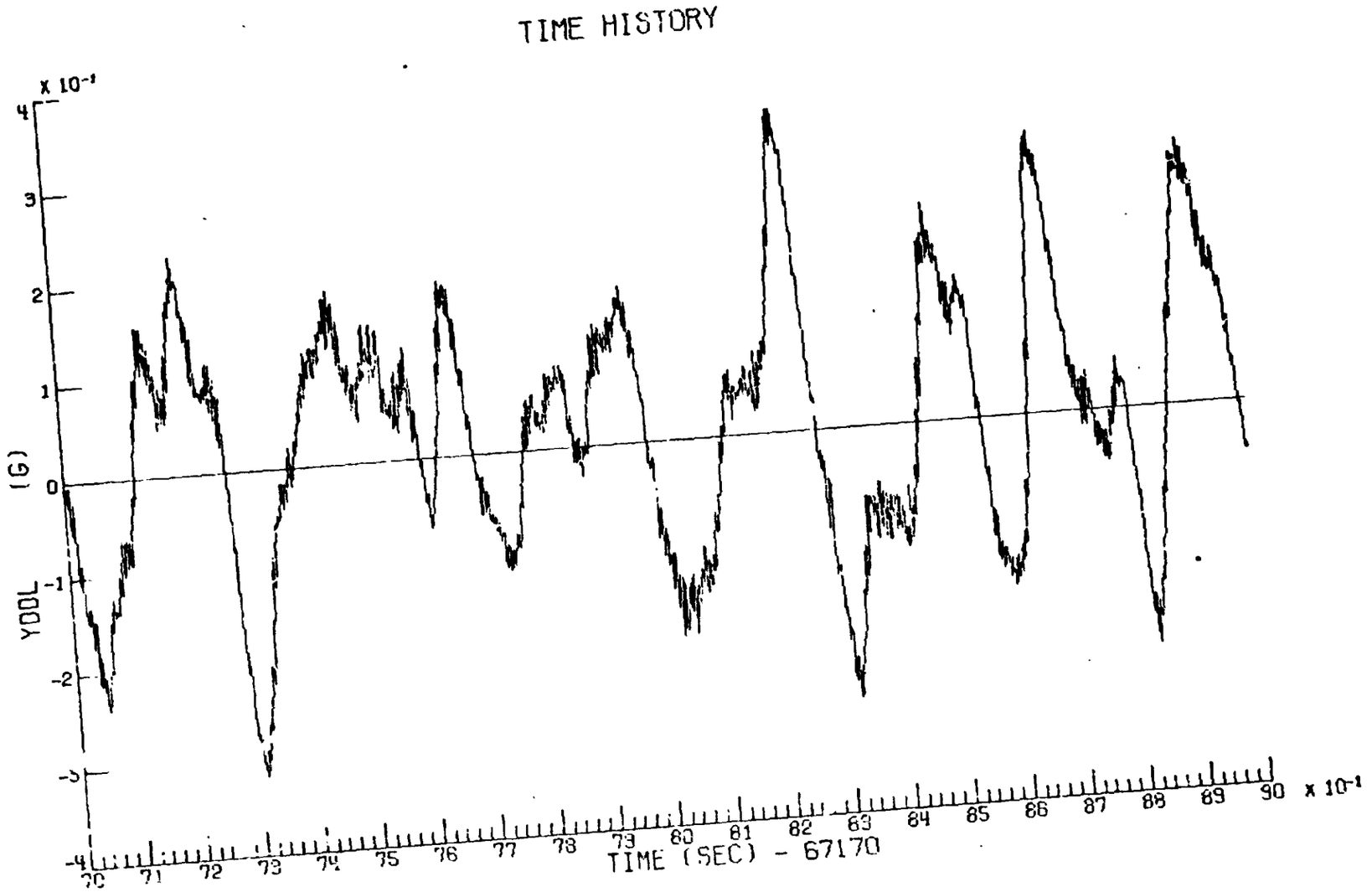
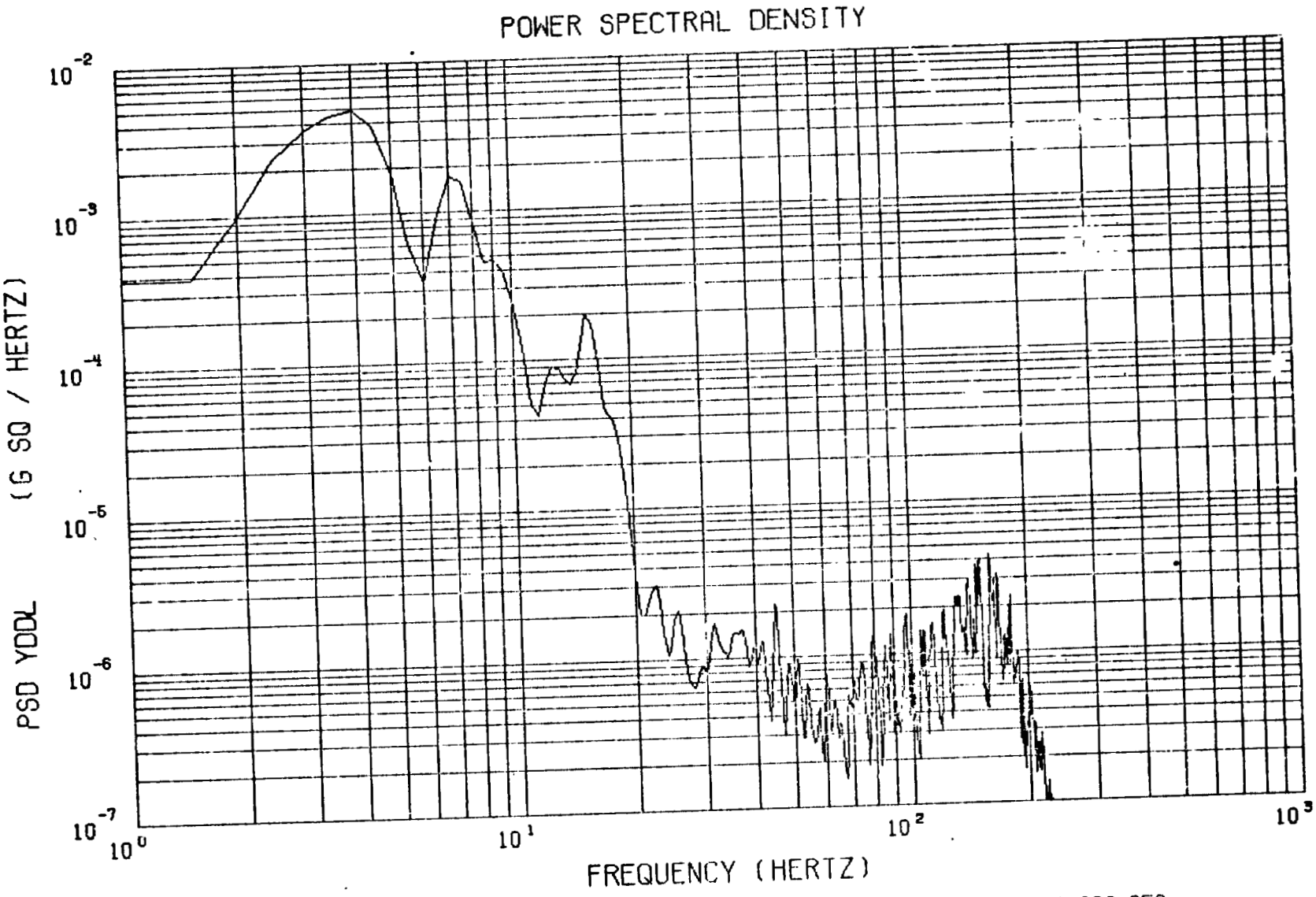

TIME HISTORY
X 10⁻¹
4
3
2
1
0
-1
-2
-3
-4
(G)
YDDL
70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 X 10⁻¹
TIME (SEC) - 67170
MAX = .335
MIN = -.317
VIKING B FLT (CIF)
MAX 0 - 1.5
YDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/28/76

Figure 4.47a

C-2



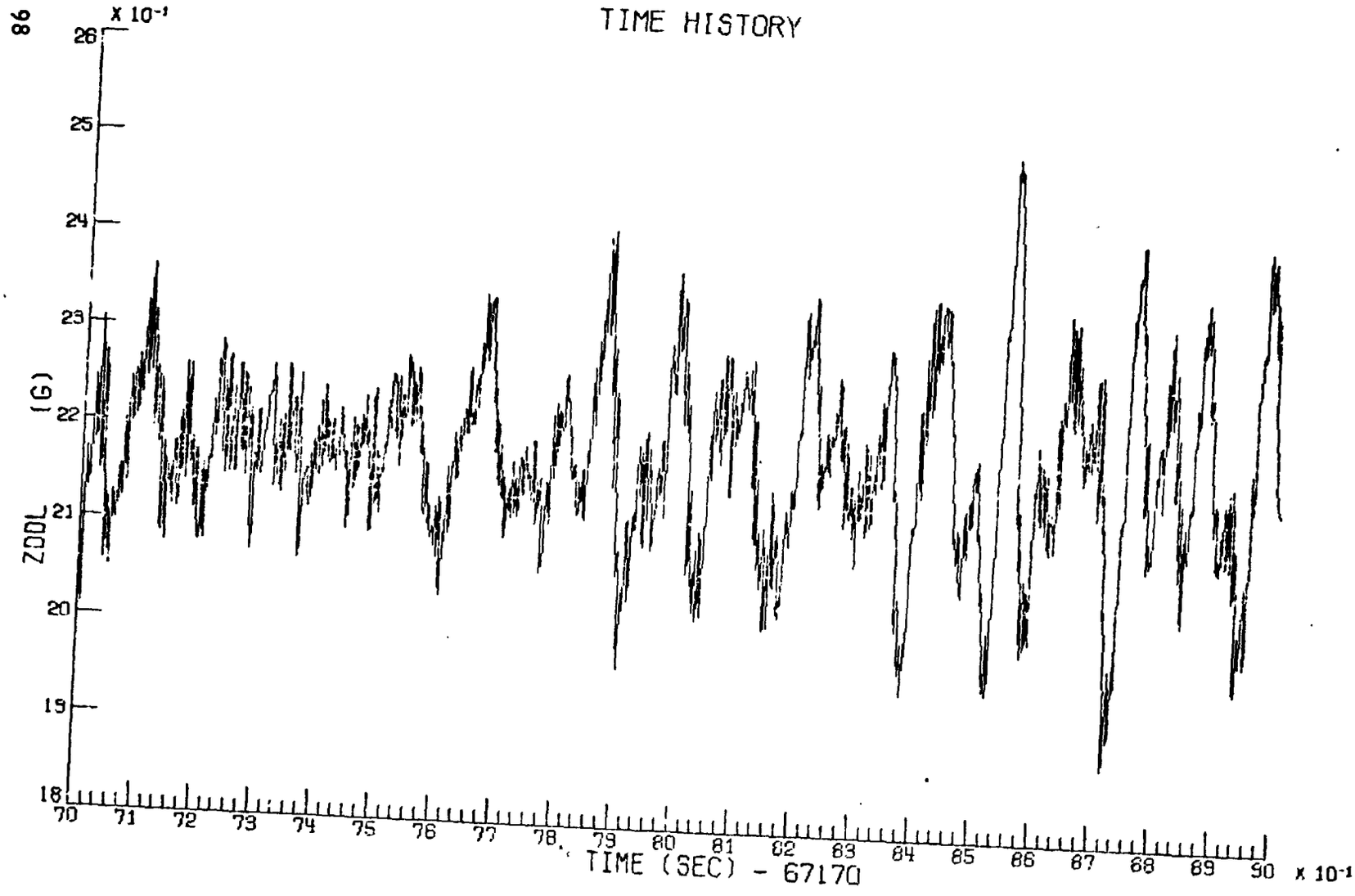
ΔF = .500 START = 67177.000 SEC STOP = 67178.999 SEC

MEAN = 15543 x 10^{-6} σ^2 = 16346 x 10^{-6} σ = 12785 x 10^{-6} 3σ = 38355 x 10^{-6}

VIKING B FLT (CIF) MAX Q - 1.5 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.47b



MAX = 2.506

MIN = 1.680

VIKING B FLT (CIF)

MAX Q - 1.5

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

ZDDL

Figure 4.48a

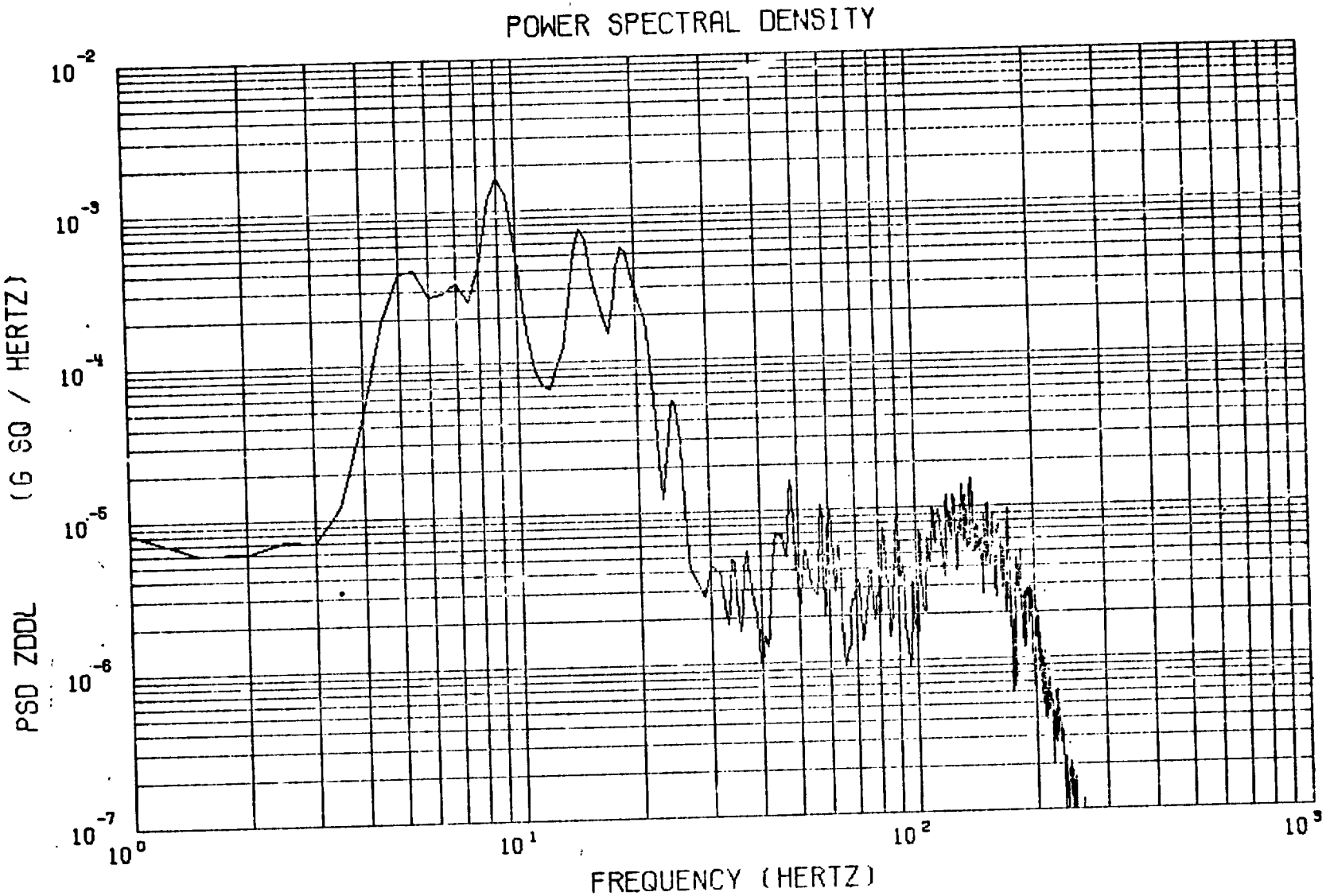
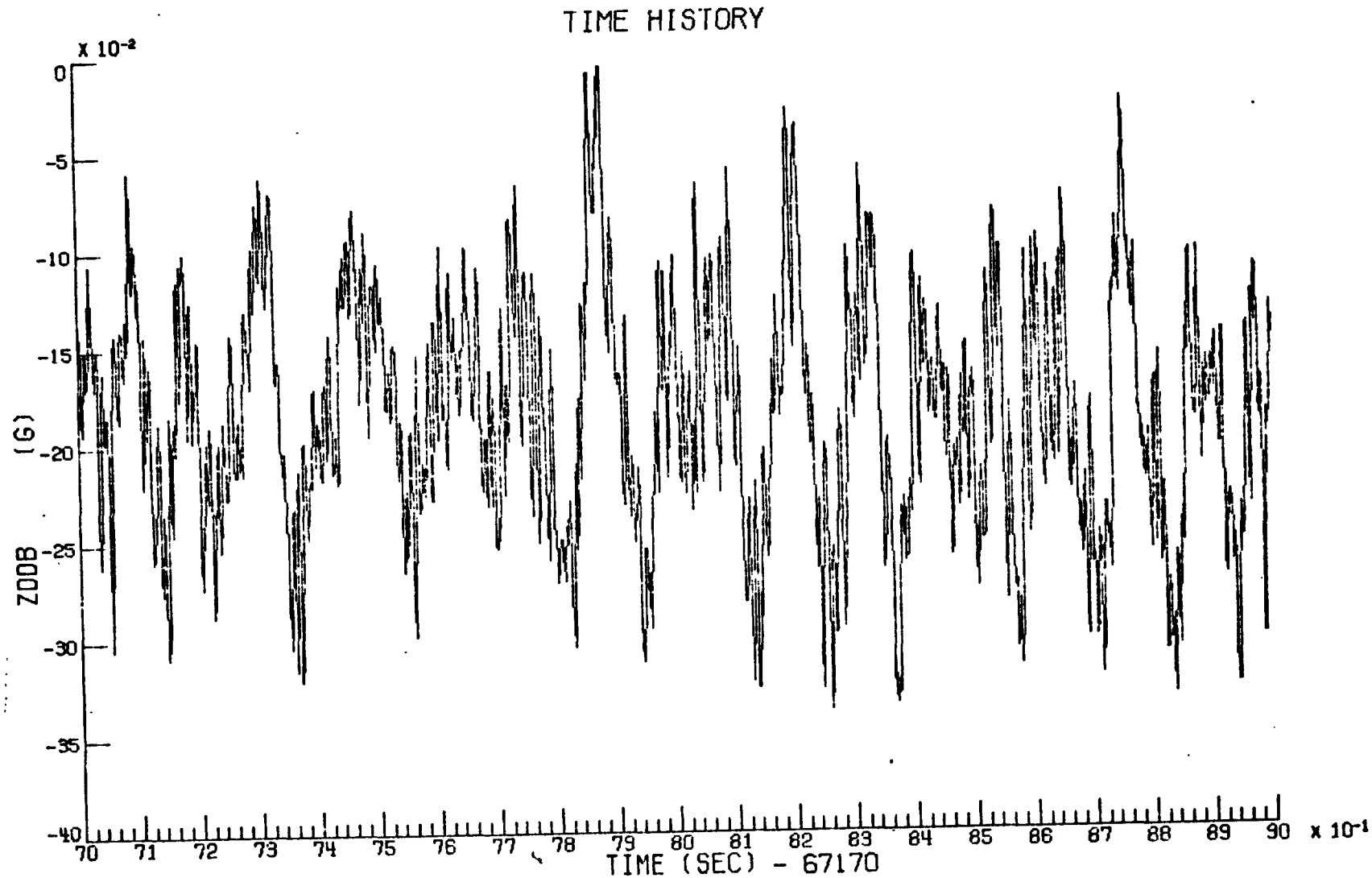

POWER SPECTRAL DENSITY
PSD ZDDL (G SQ / HERTZ)
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
10^{0}
10^{1}
10^{2}
10^{3}
FREQUENCY (HERTZ)
ΔF = .500
START = 67177.000 SEC
STOP = 67176.999 SEC
MEAN = 21819 x 10^{-9}
σ^2 = 79151 x 10^{-7}
σ = 88967 x 10^{-5}
3σ = 2669 x 10^{-4}
VIKING B FLT (C1F)
MAX Q - 1.5
ZDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.48b



MAX = -.006

MIN = -.337

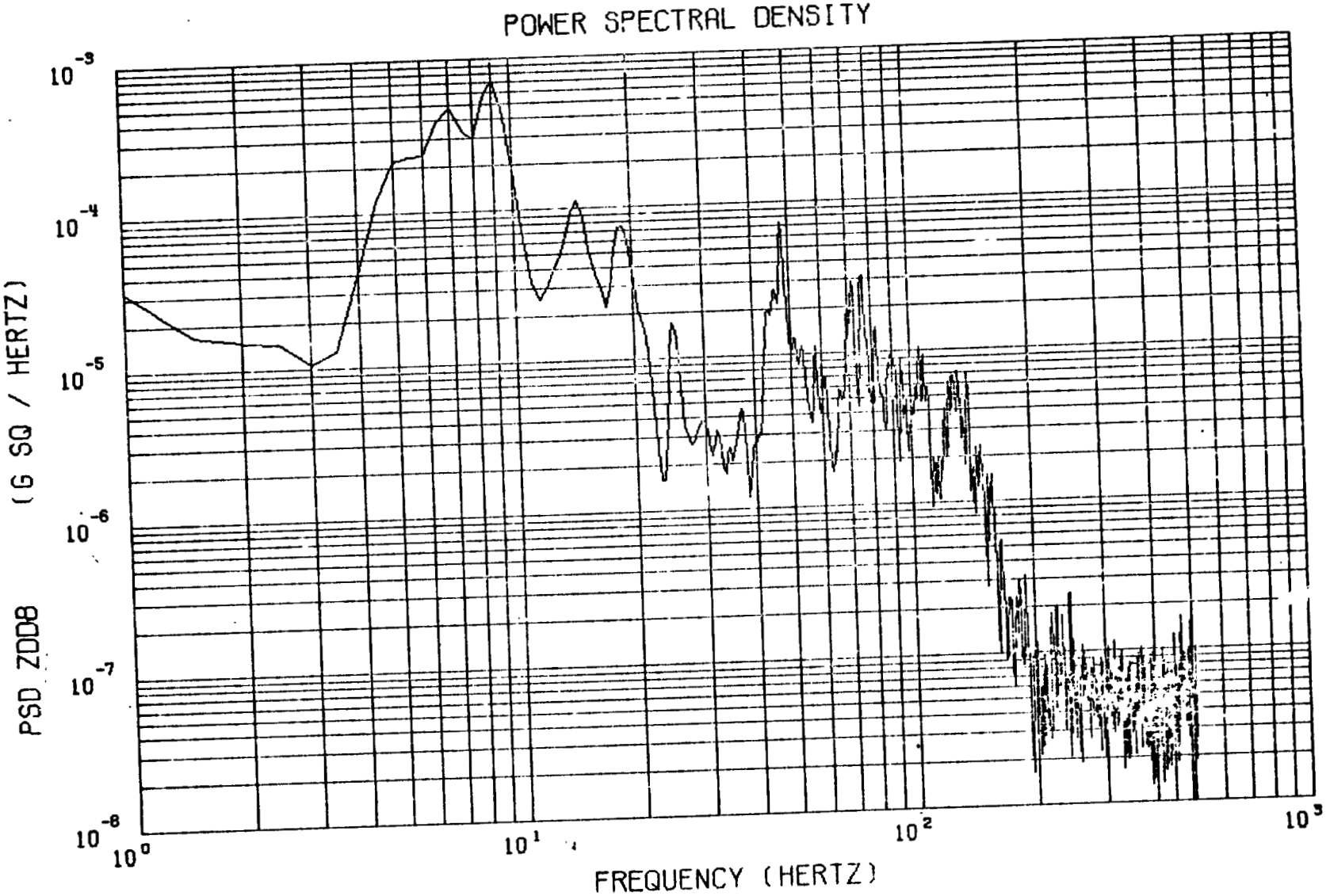
VIKING B FLT (CIF)

MAX Q - 1.5

ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.49a



ΔF = .500 START = 67177.000 SEC STOP = 67178.999 SEC

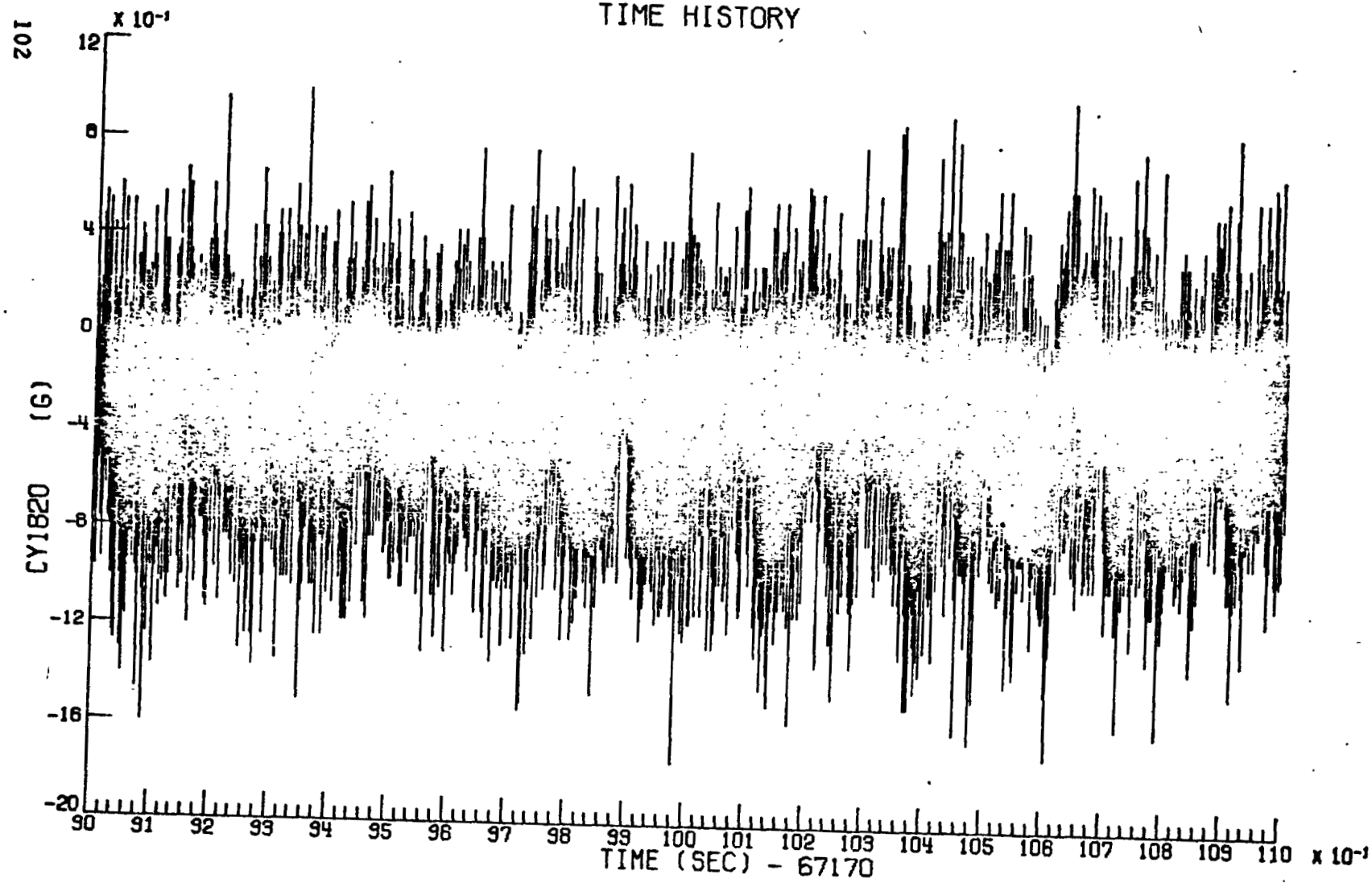
MEAN = -1848×10^{-9} $\sigma^2 = 37301 \times 10^{-7}$ $\sigma = 61074 \times 10^{-5}$ $3\sigma = 18322 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 1.5 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

101

Figure 4.49b



MAX = 1.000

MIN = -1.734

VIKING B FLT (CIF)

MAX Q - 2

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.50

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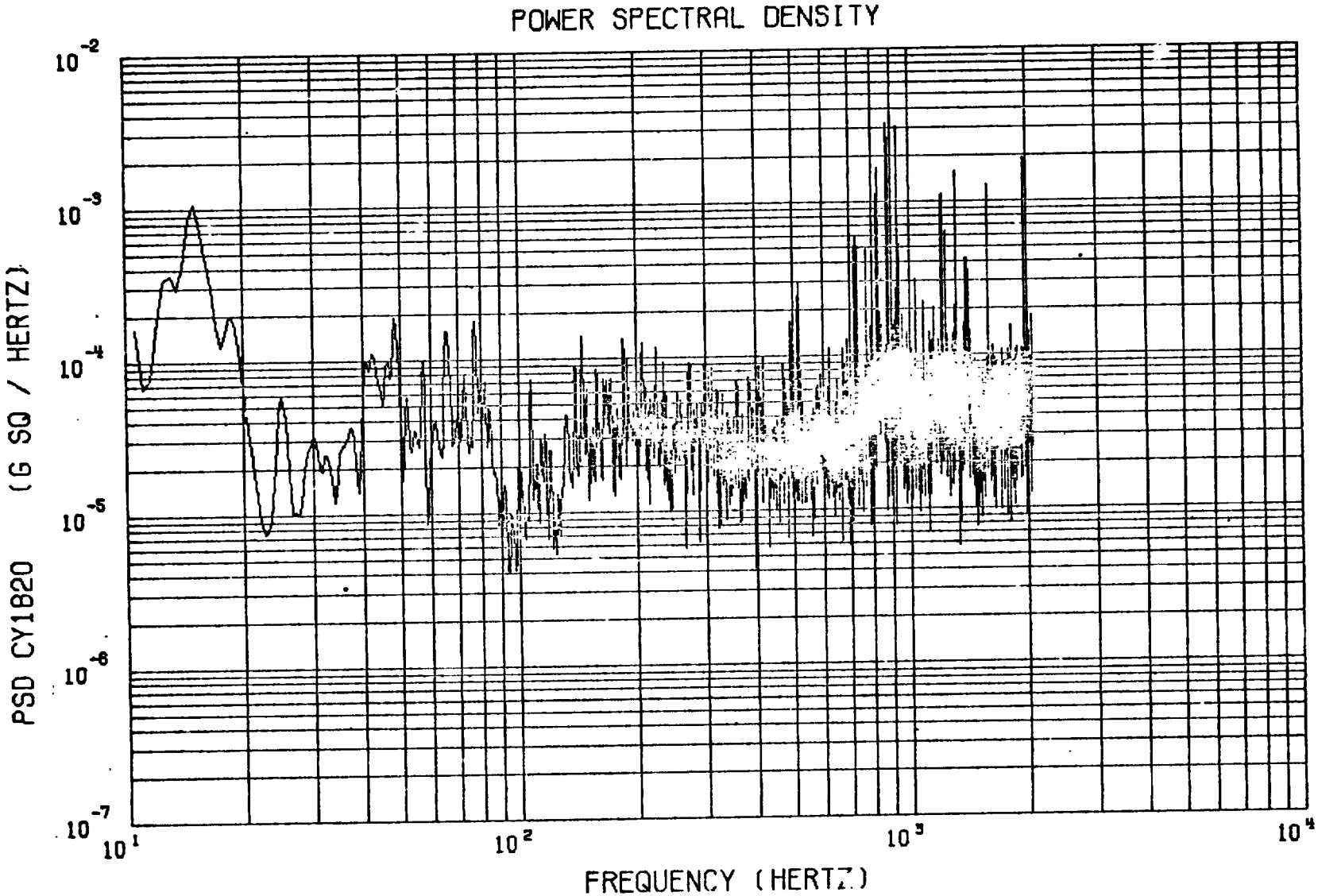


ΔF = .499 START = 67179.000 SEC STOP = 67180.999 SEC

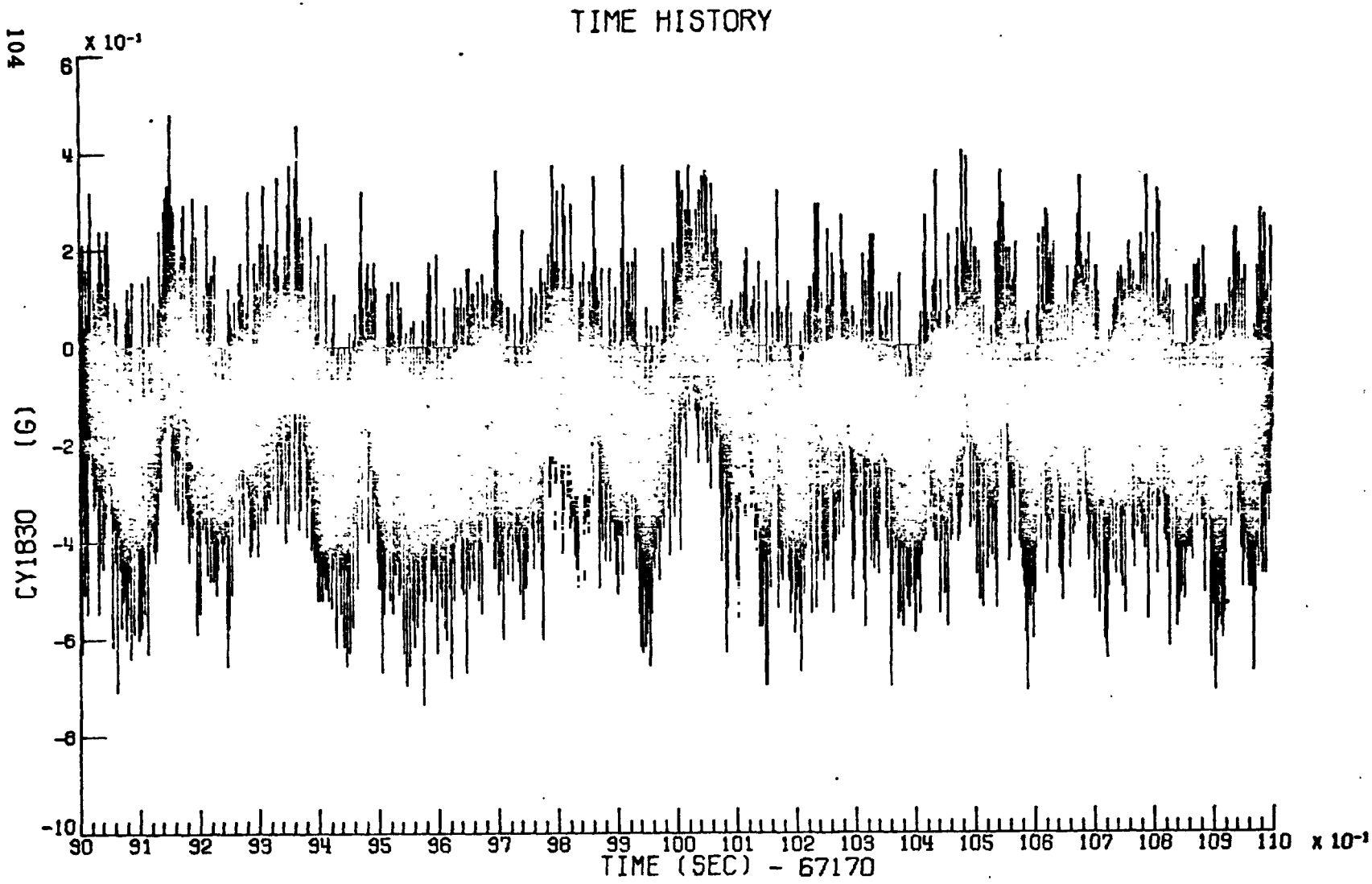
MEAN = -30376×10^{-8} $\sigma^2 = 12865 \times 10^{-5}$ $\sigma = 35868 \times 10^{-8}$ $3\sigma = 1076 \times 10^{-3}$

VIKING B FLT (CIF) MAX Q - 2 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.50b

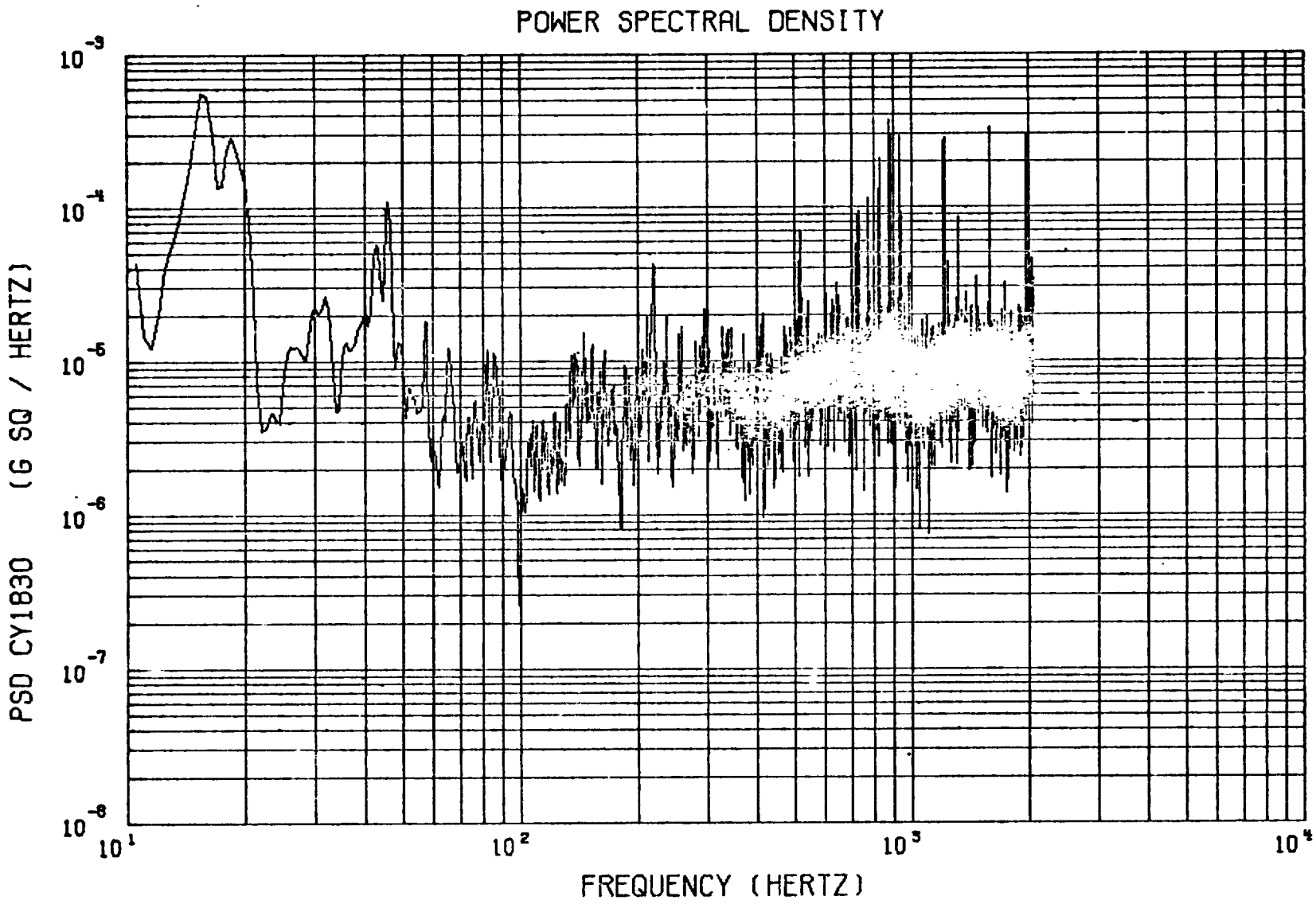


MAX = .480 MIN = -.734

VIKING B FLT (CIF) MAX Q - 2 CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75 4096 SPS

Figure 4.51a



ΔF = .499 START = 67179.000 SEC STOP = 67180.999 SEC

MEAN = -13737×10^{-5} $\sigma^2 = 27973 \times 10^{-5}$ $\sigma = 16725 \times 10^{-5}$ $3\sigma = 50175 \times 10^{-5}$

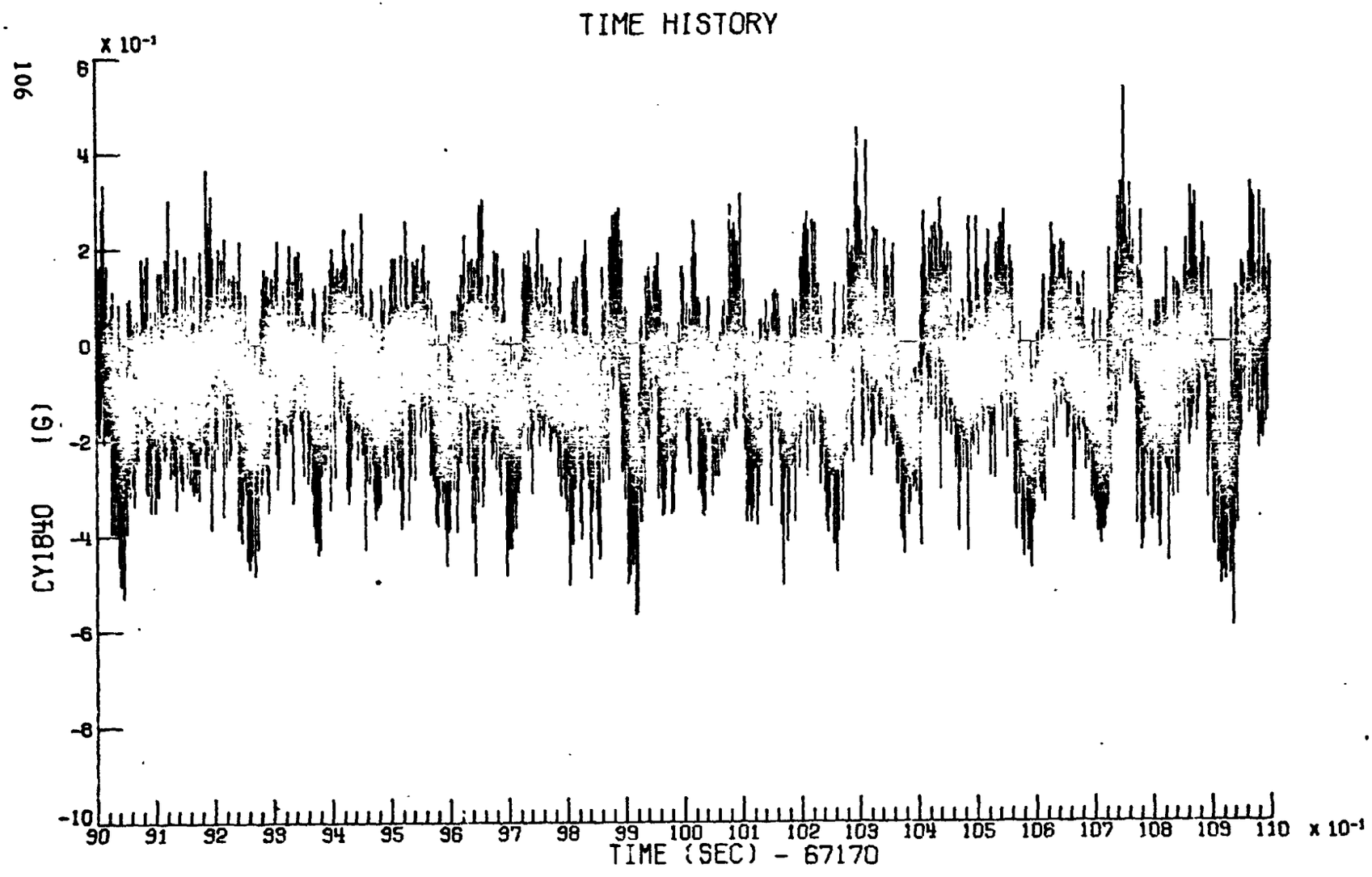
105

VIKING B FLT (CIF) MAX Q - 2 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.51b



MAX = .533

MIN = -.589

VIKING B FLT (CIF)

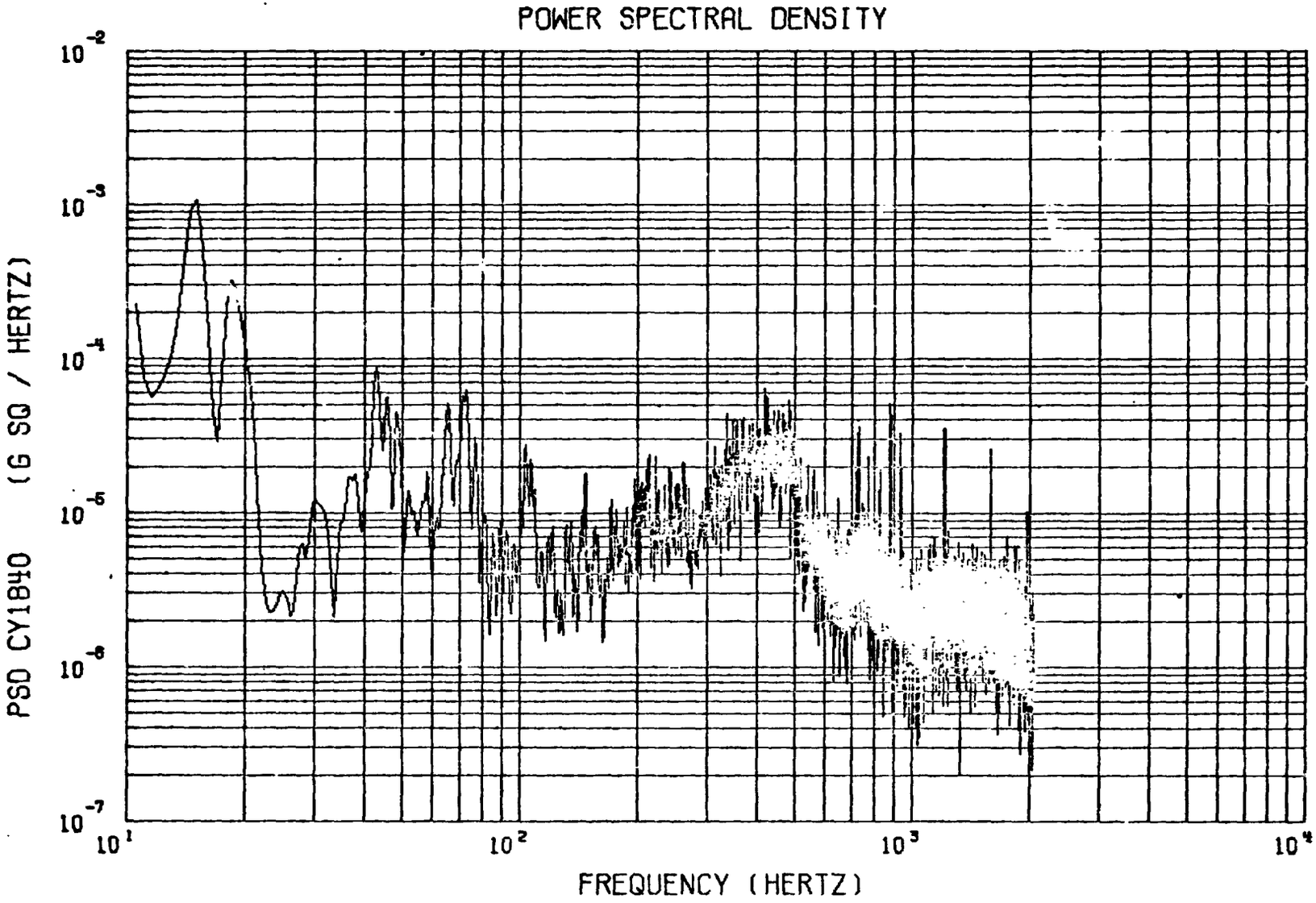
MAX Q - 2

4096 SPS

.CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.52a



ΔF = .499 START = 67179.000 SEC STOP = 67180.999 SEC

MEAN = -73582 x 10^{-6} σ^2 = 19222 x 10^{-5} σ = 13864 x 10^{-3} 3σ = 41593 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.3.3b

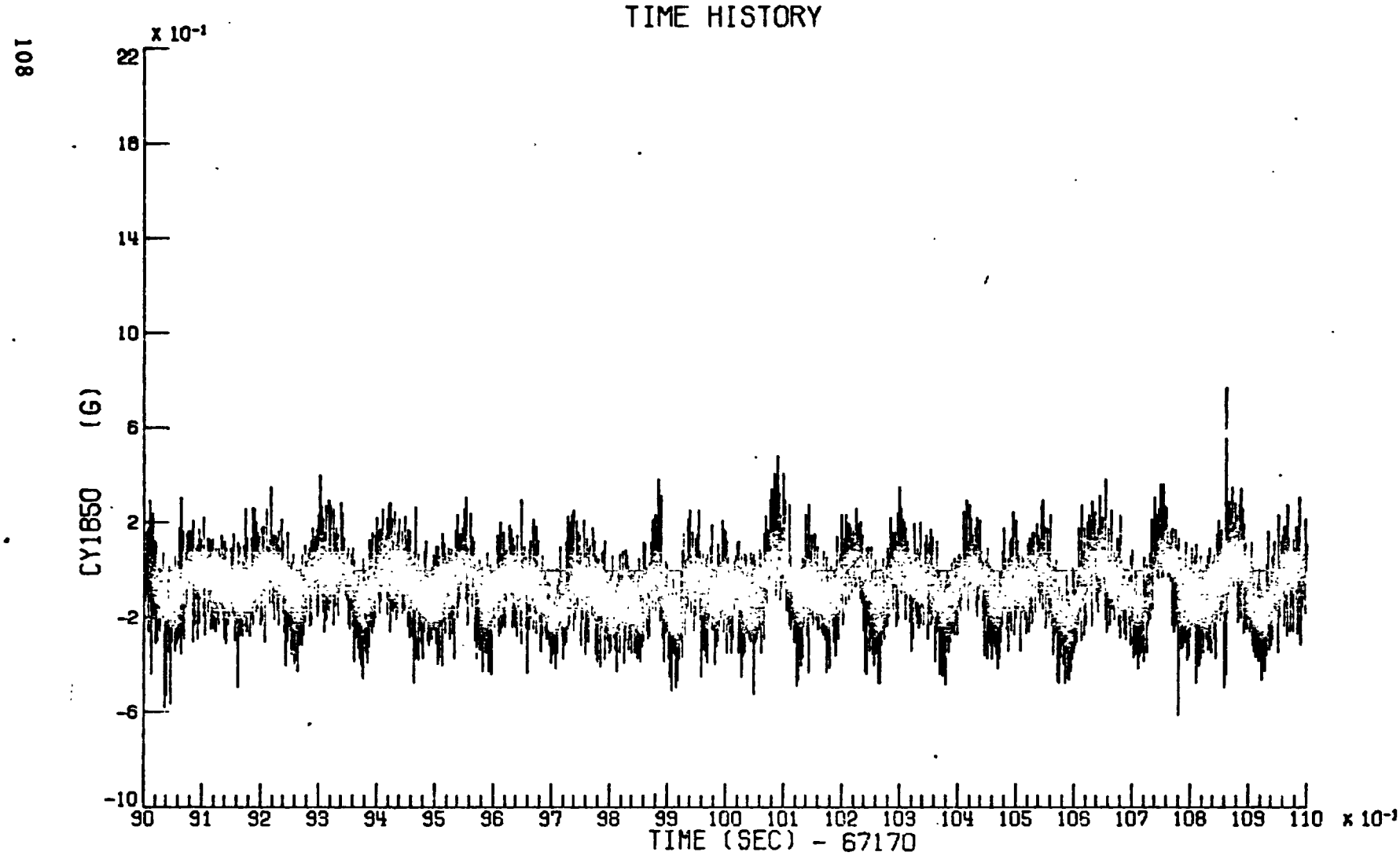
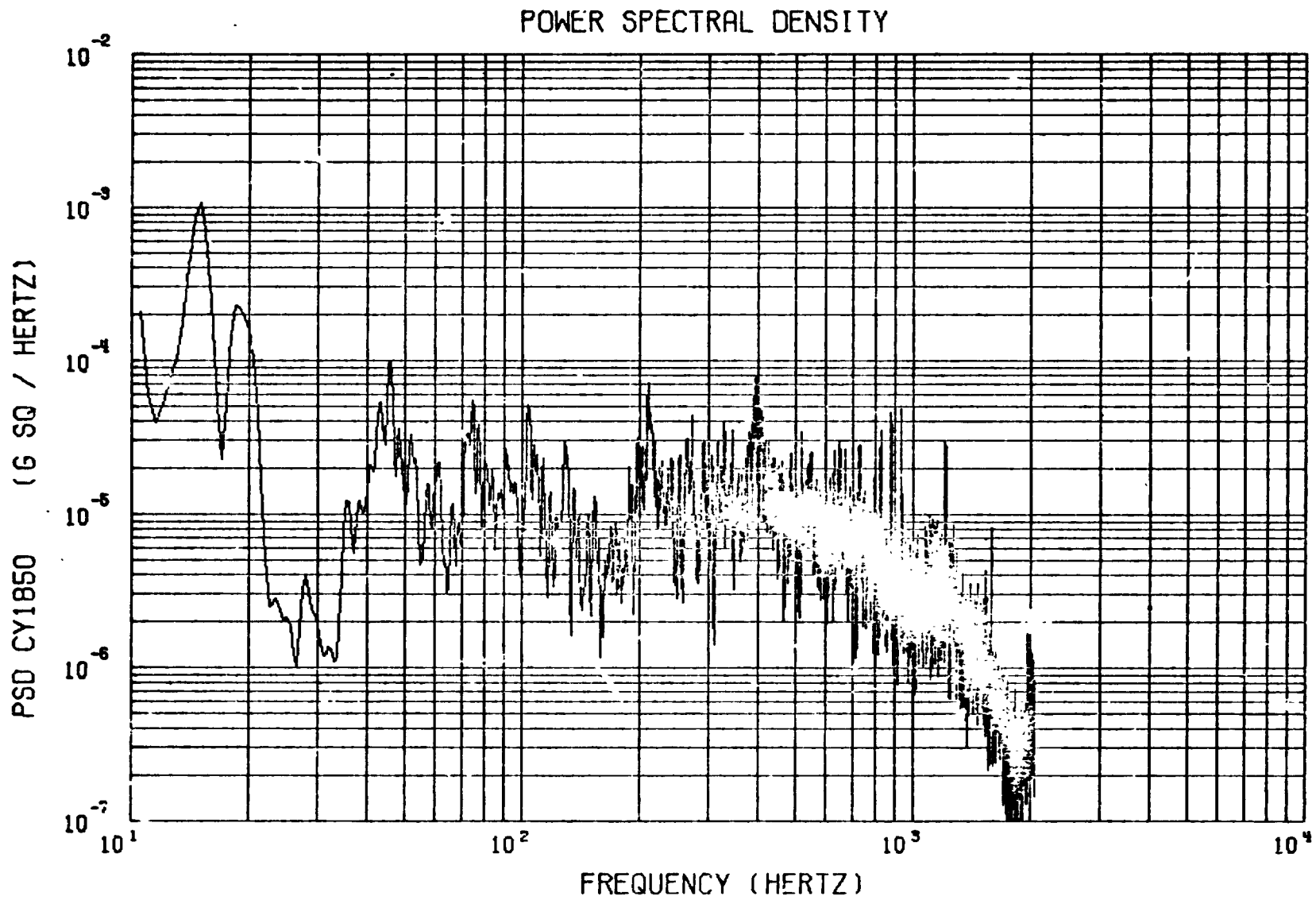

TIME HISTORY
108
x 10⁻¹
22
18
14
10
6
2
-2
-6
-10
CY1850 (G)
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 x 10⁻¹
TIME (SEC) - 67170
MAX = .767
MIN = -.611
VIKING B FLT (CIF)
MAX Q - 2
CY1850
4096 SPS
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.53a



ΔF = .499 START = 67179.000 SEC STOP = 67180.999 SEC

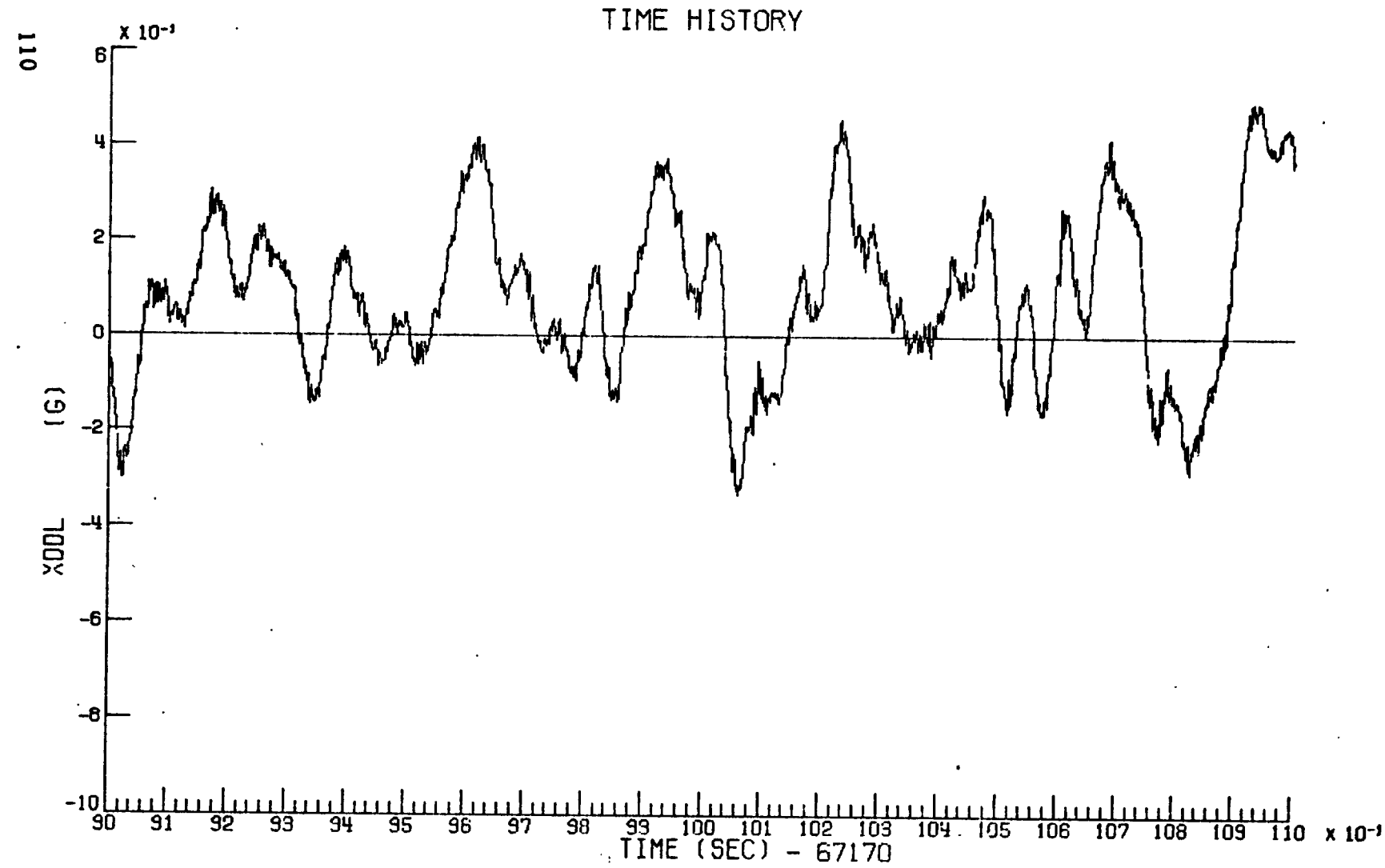
MEAN = -75651 x 10^{-6} σ^2 = 19777 x 10^{-6} σ = 14063 x 10^{-6} 3σ = 4219 x 10^{-4}

VIKING B FLT (CIF) MAX Q - 2 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 03/22/75

Figure 4.53b



MAX = .492

MIN = -.331

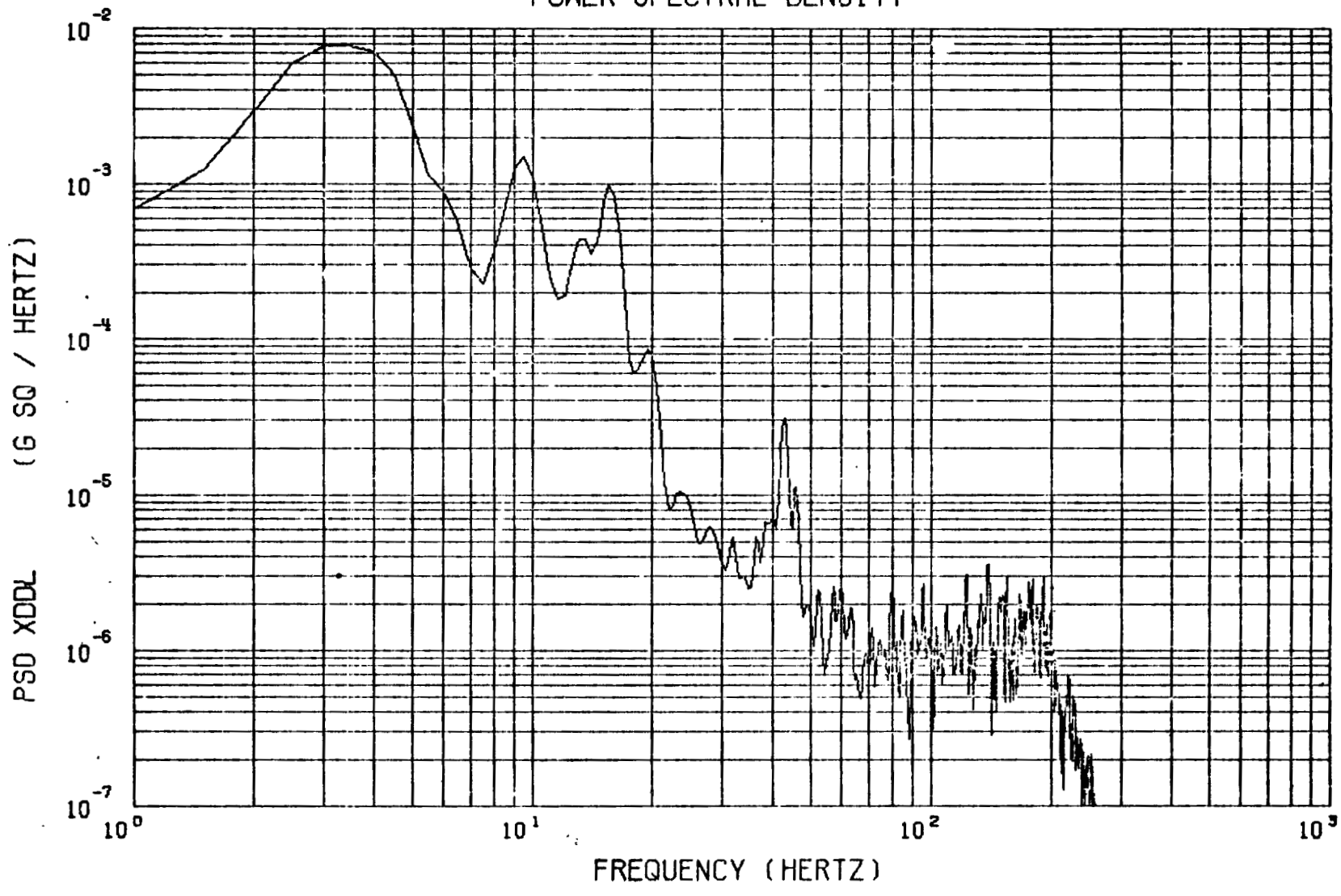
VIKING B FLT (CIF)

MAX Q - 2

XODL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.54a



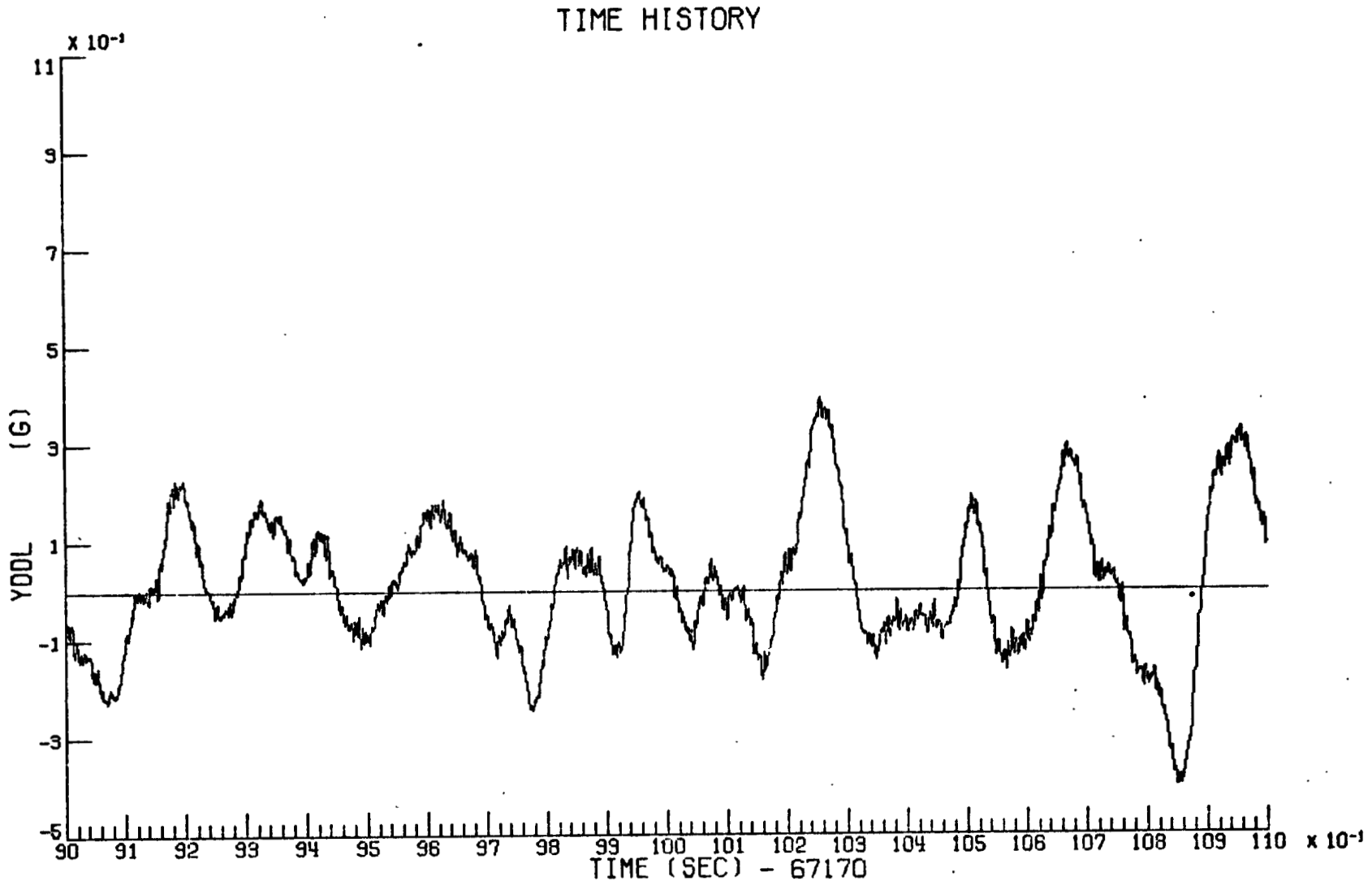
ΔF = .500 START = 67179.000 SEC STOP = 67180.999 SEC

MEAN = 85743 x 10^{-5} σ^2 = 28602 x 10^{-5} σ = 16912 x 10^{-5} 3σ = 50737 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.54b

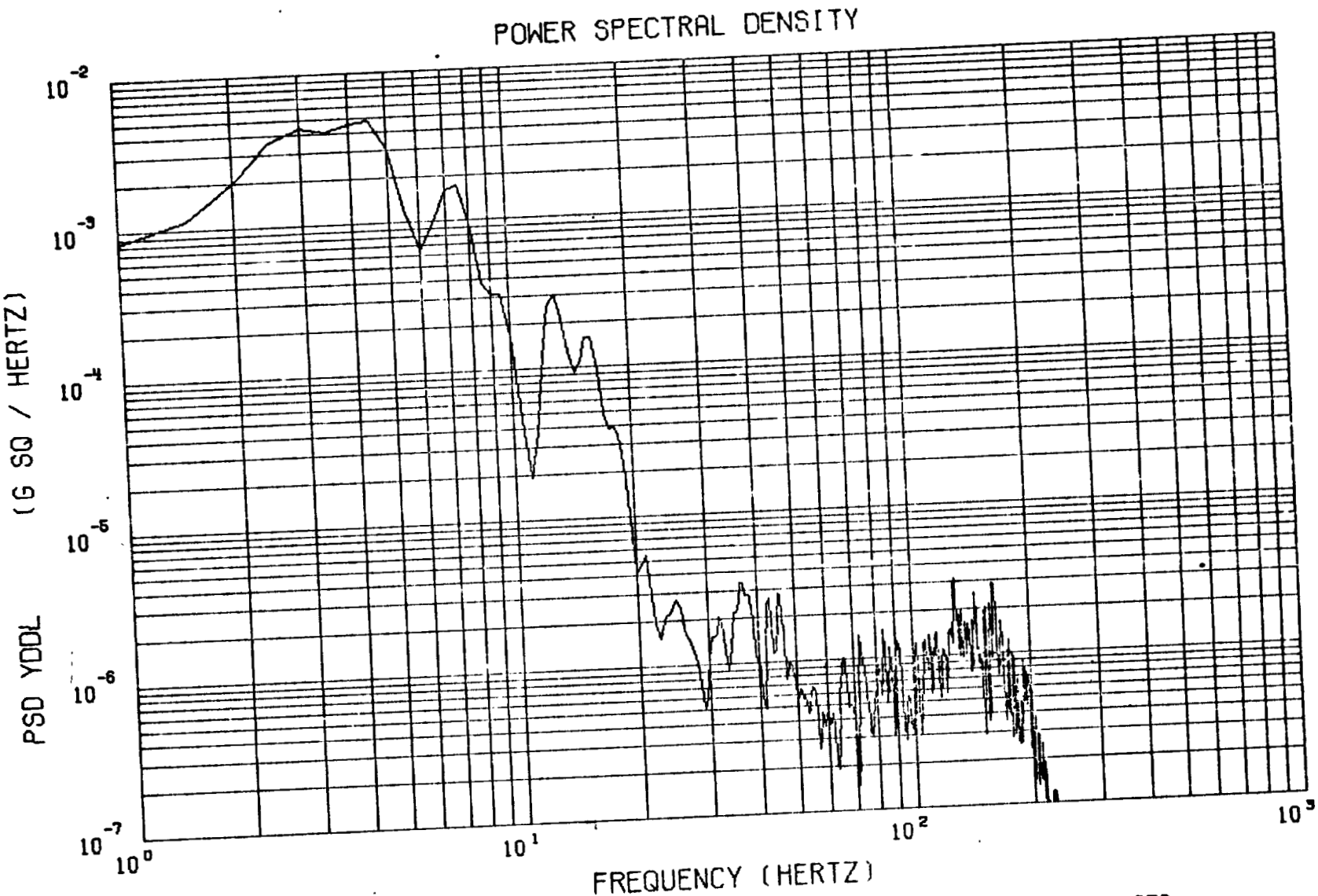


MAX = .390 MIN = -.402

VIKING B FLT (CIF) MAX Q - 2 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.55a



ΔF = .500

START = 67179.000 SEC

STOP = 67180.999 SEC

MEAN = 12706 x 10^{-6} σ^2 = 19822 x 10^{-6} σ = 14079 x 10^{-6} 3σ = 42237 x 10^{-6}

VIKING B FLT (CIF) MAX Q - 2 YDDL

Figure 4.55b

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

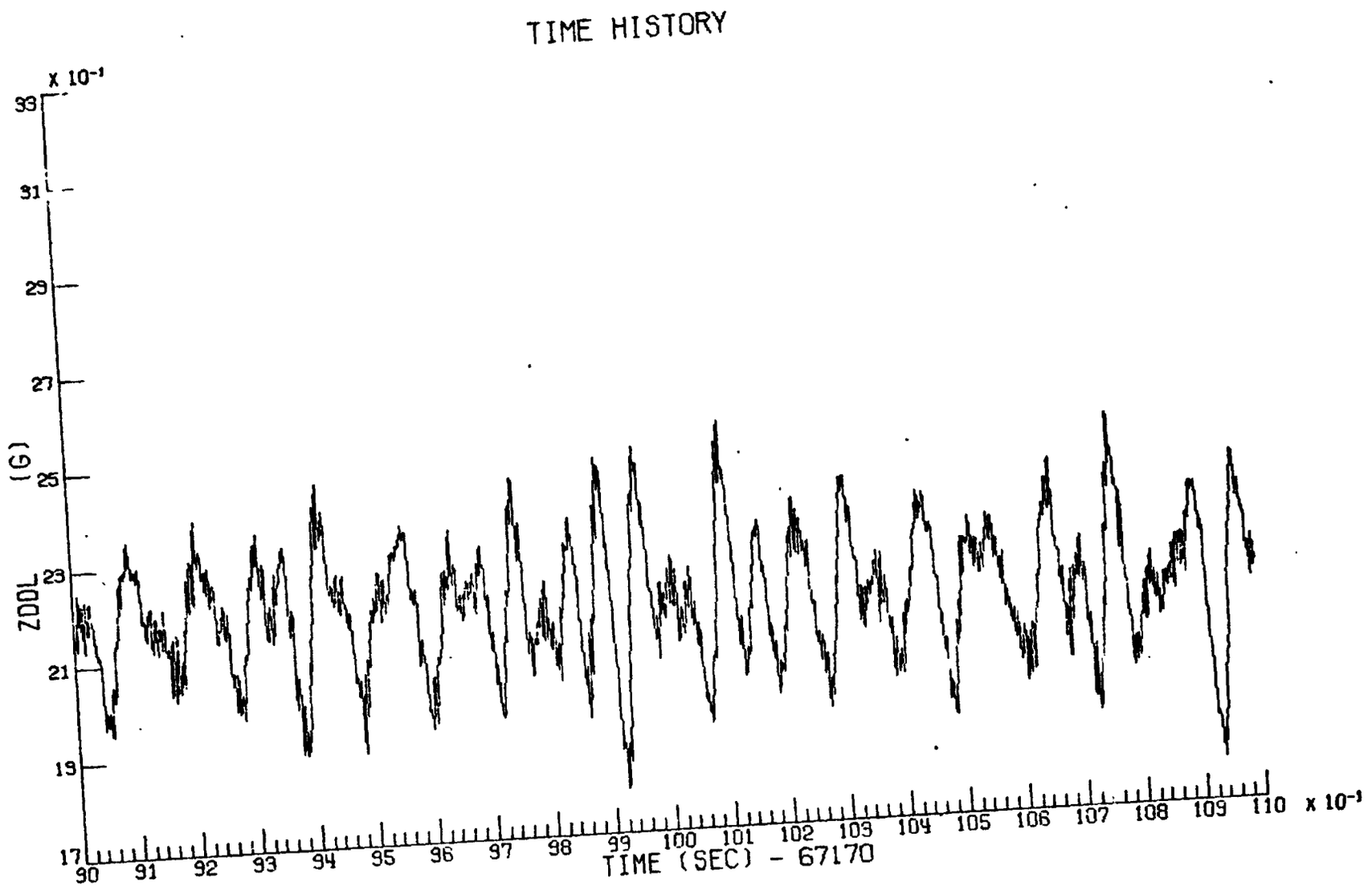
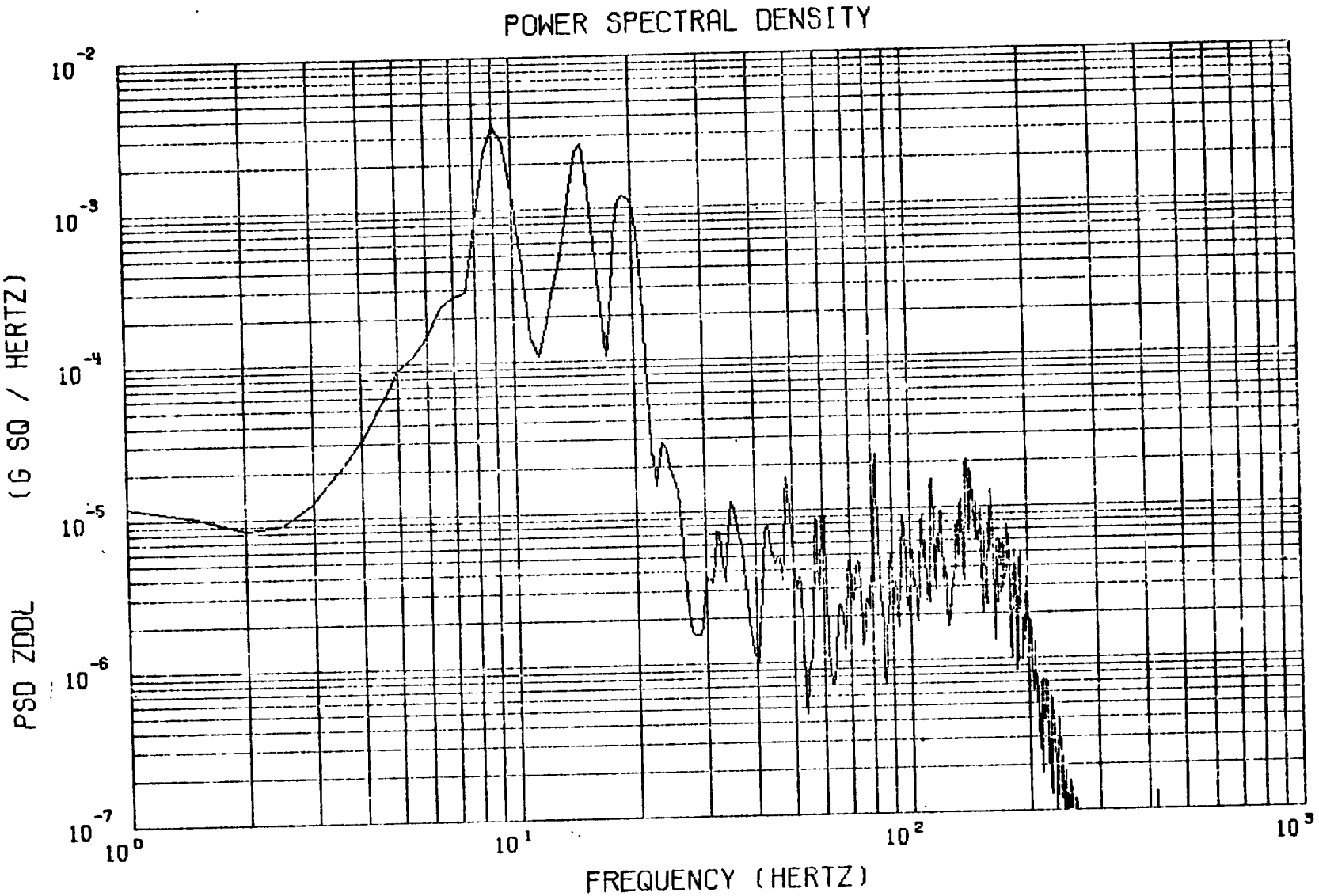

TIME HISTORY
X 10⁻¹
33
31
29
27
25
23
21
19
17
ZDDL (G)
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 X 10⁻¹
TIME (SEC) - 67170
MAX = 2.540
MIN = 1.789
VIKING B FLT (CIF)
MAX Q - 2
ZDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.56a



ΔF = .500 START = 67179.000 SEC STOP = 67180.999 SEC

MEAN = 21778 x 10^{-6} σ^2 = 15822 x 10^{-6} σ = 12578 x 10^{-5} 3σ = 37735 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2 ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.56b

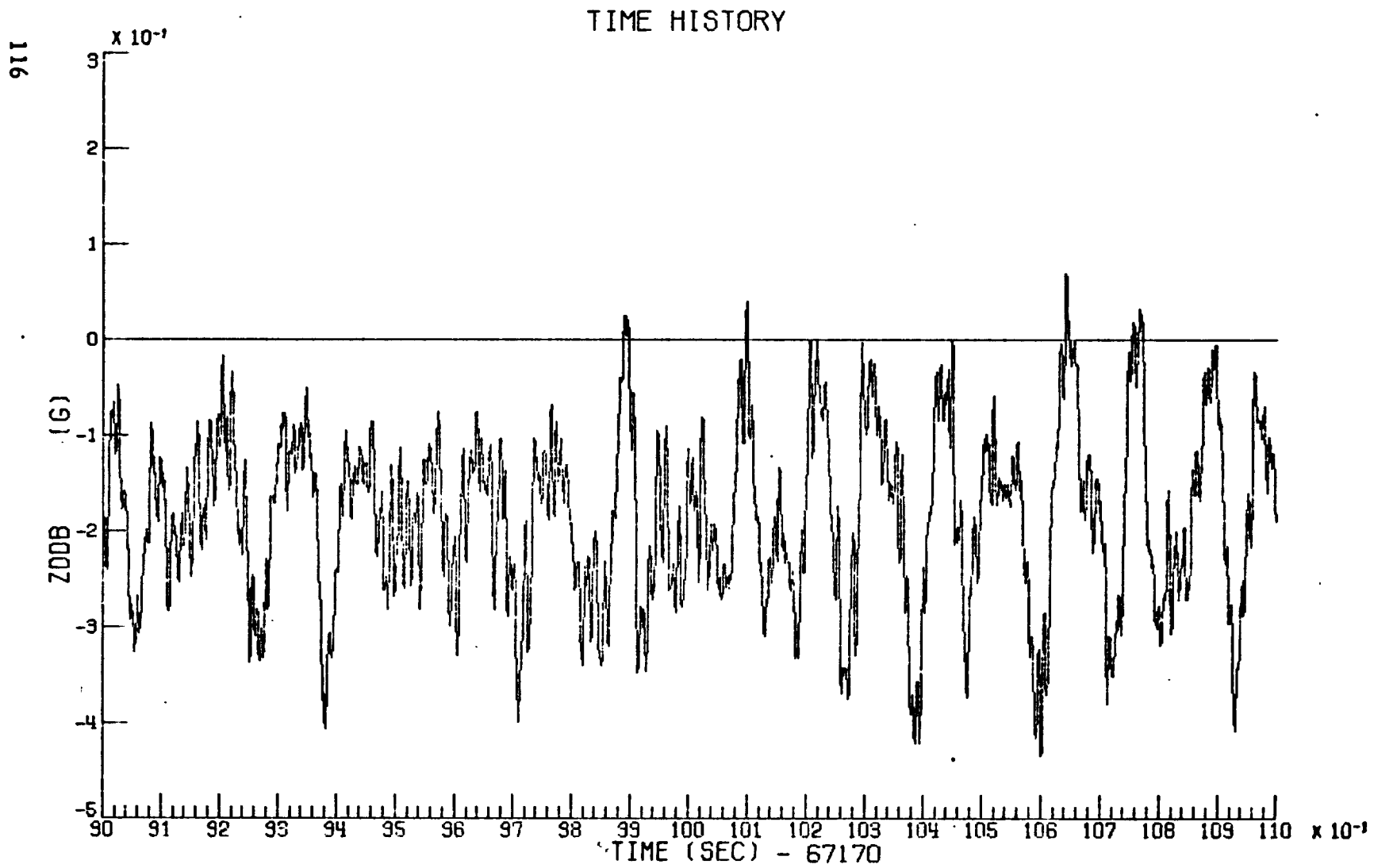
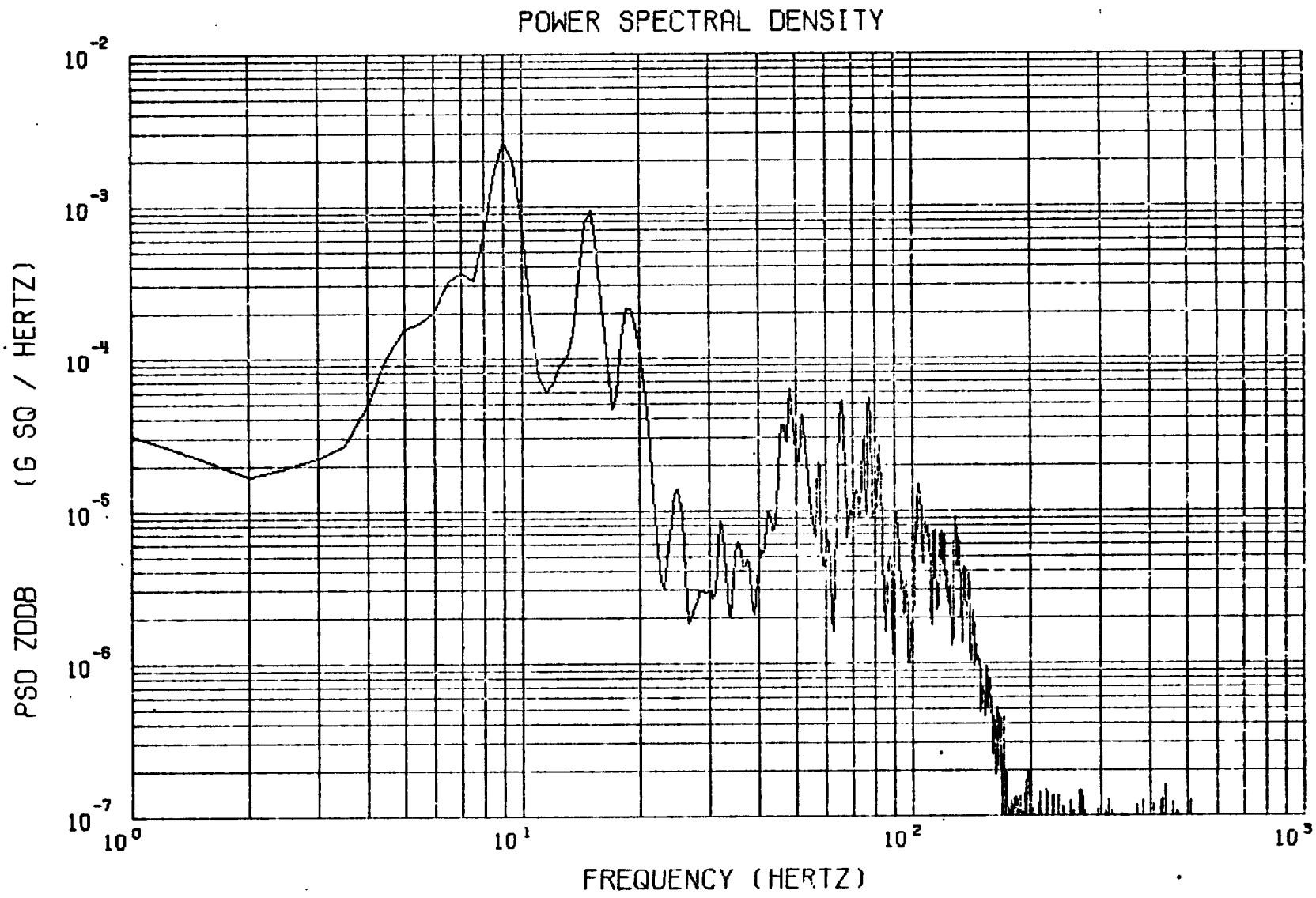

TIME HISTORY
116
X 10⁻¹
3
2
1
0
-1
-2
-3
-4
-5
ZDDB (G)
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 X 10⁻¹
TIME (SEC) - 67170
MAX = .068
MIN = -.434
VIKING B FLT (CIF)
MAX 0 - 2
ZDDB
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.57a



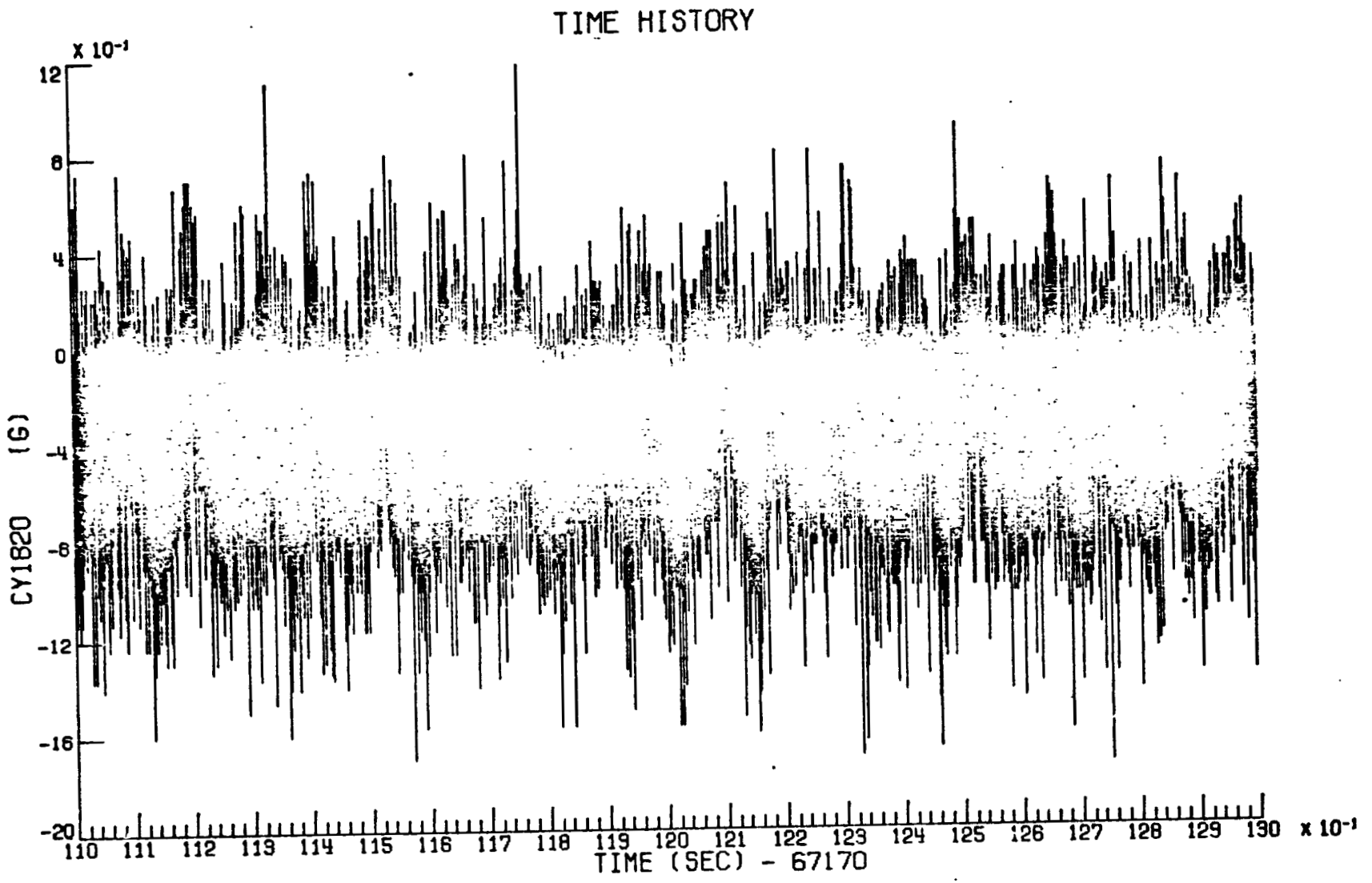
ΔF = .500 START = 67179.000 SEC STOP = 67180.999 SEC

MEAN = -1841 x 10^{-8} σ^2 = 83818 x 10^{-7} σ = 91552 x 10^{-8} 3σ = 27465 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.57b



MAX = 1.167

MIN = -1.734

VIKING B FLT (CIF)

MAX Q - 2.5

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.58a

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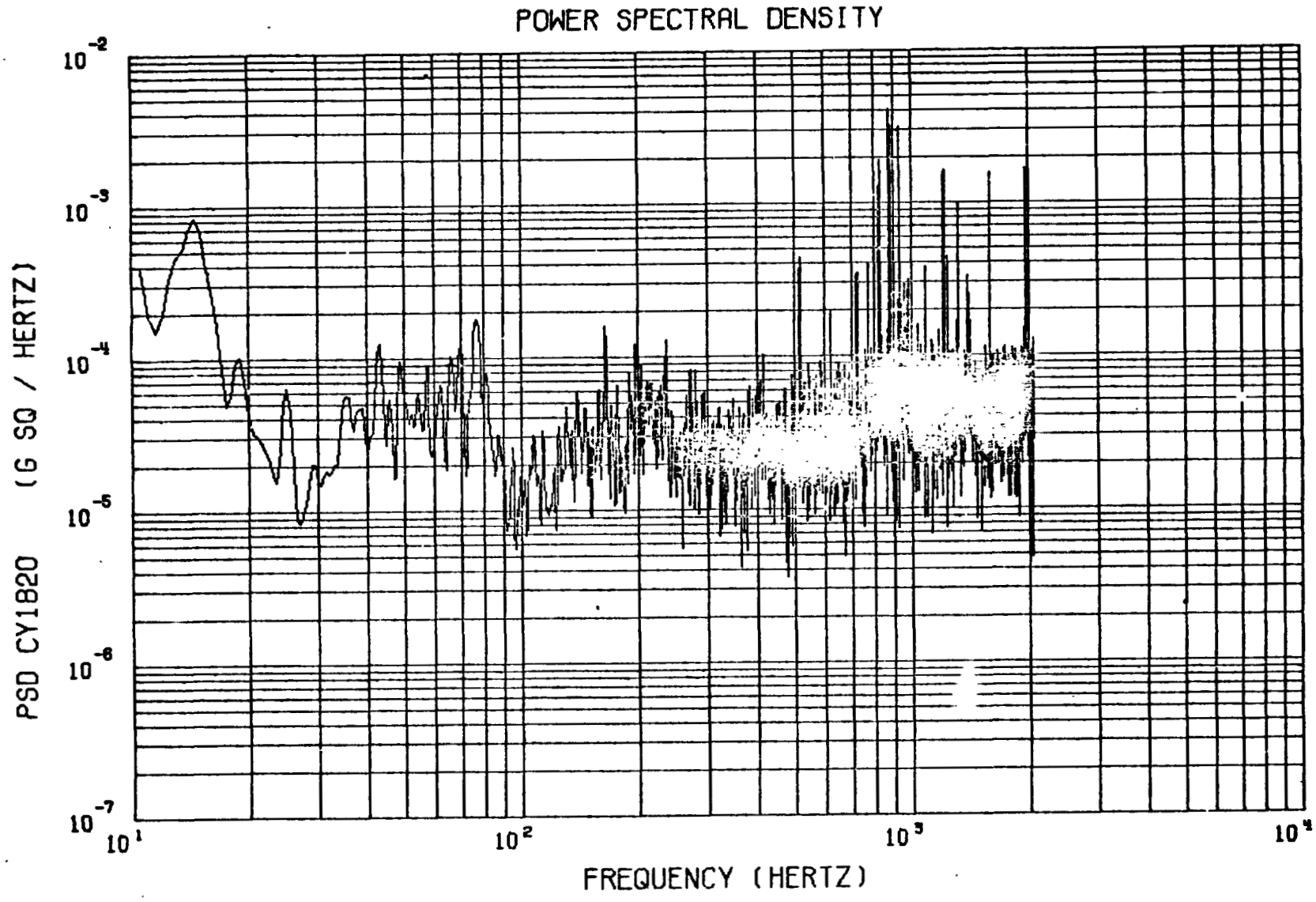


ΔF = .499 START = 67181.000 SEC STOP = 67182.999 SEC

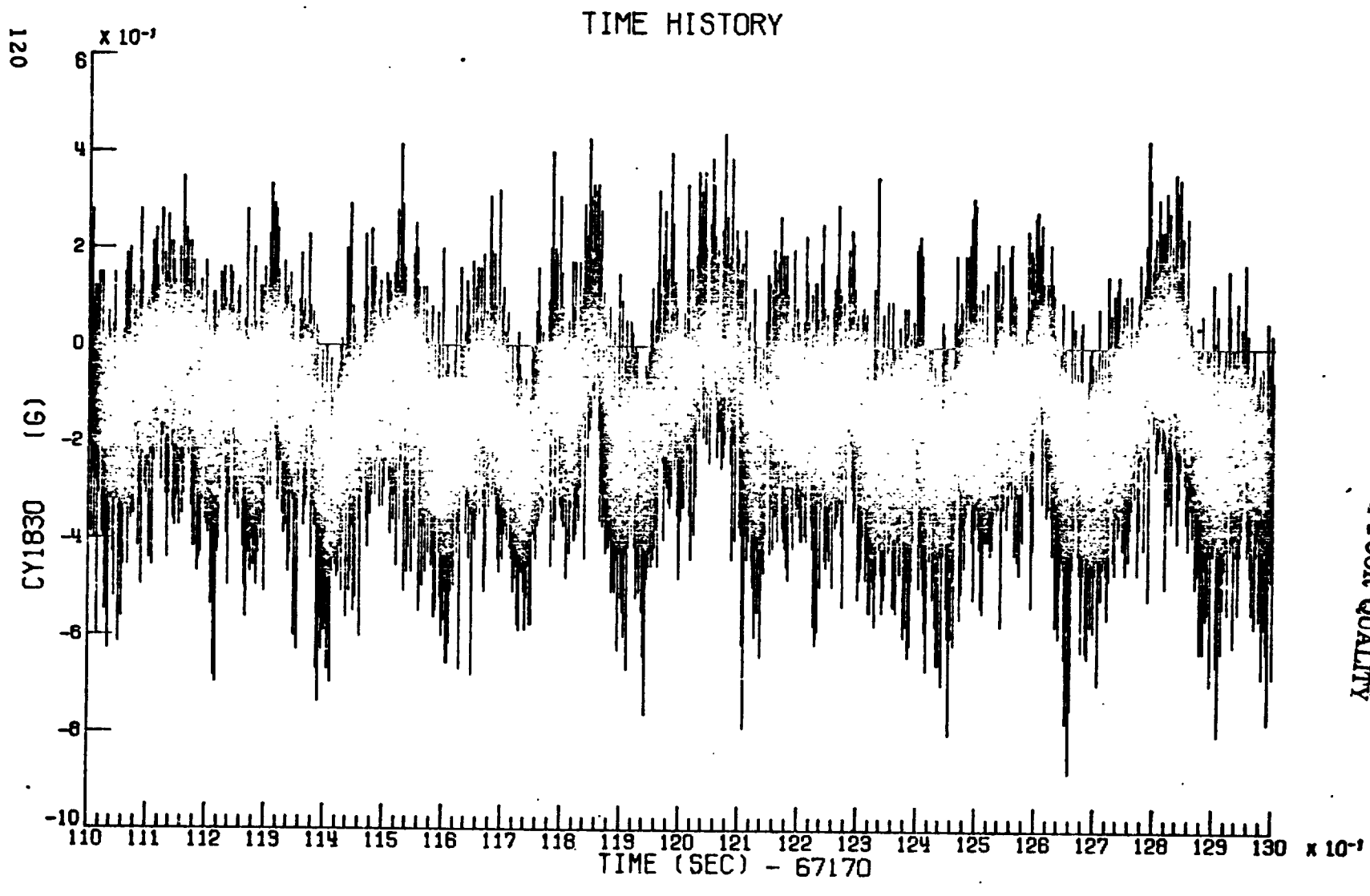
MEAN = -32259×10^{-5} $\sigma^2 = 12886 \times 10^{-5}$ $\sigma = 35898 \times 10^{-5}$ $3\sigma = 10769 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 2.5 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.58b



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MAX = .440

MIN = -.881

VIKING B FLT (CIF)

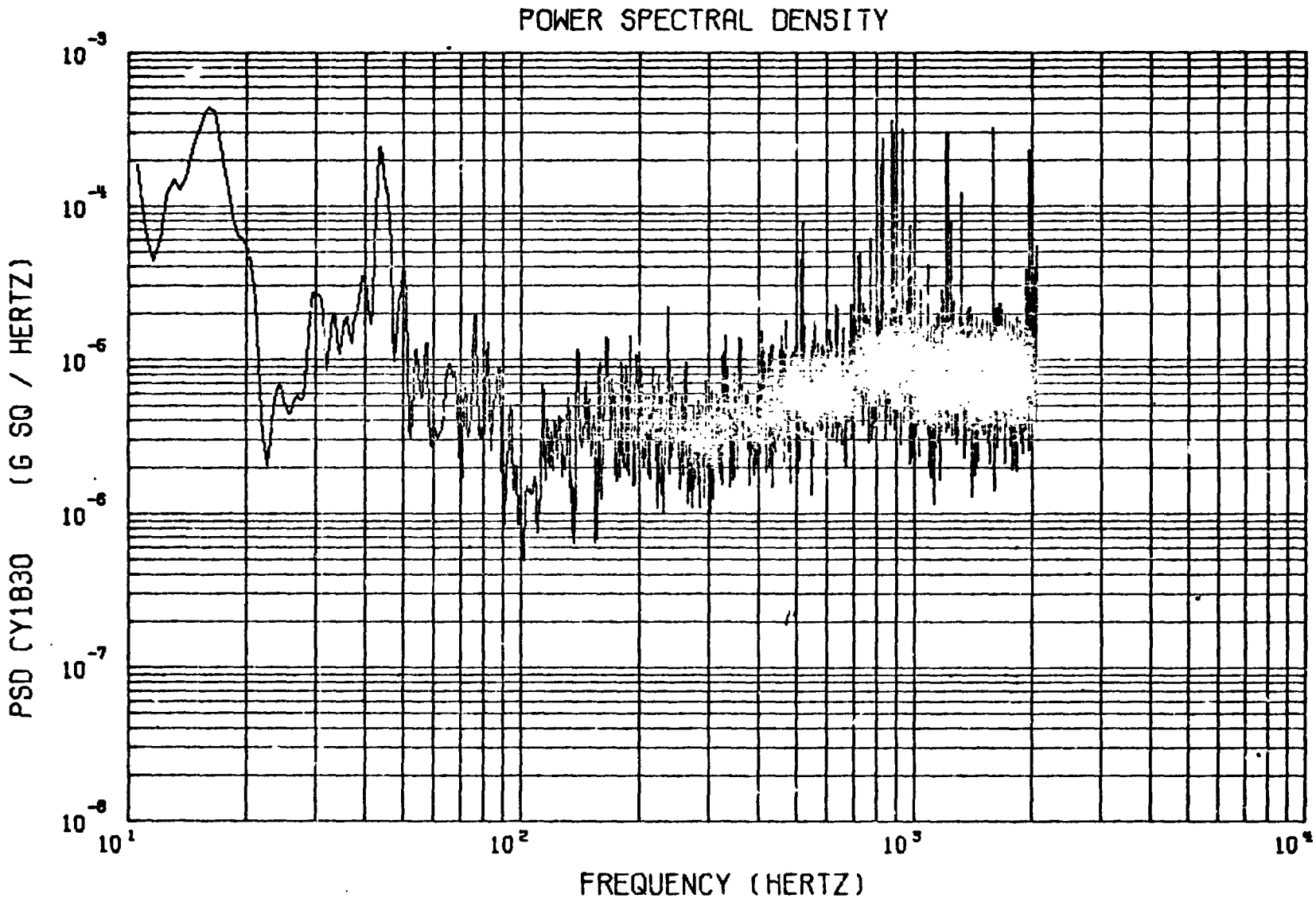
MAX Q - 2.5

CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4096 SPS

Figure 4.59a



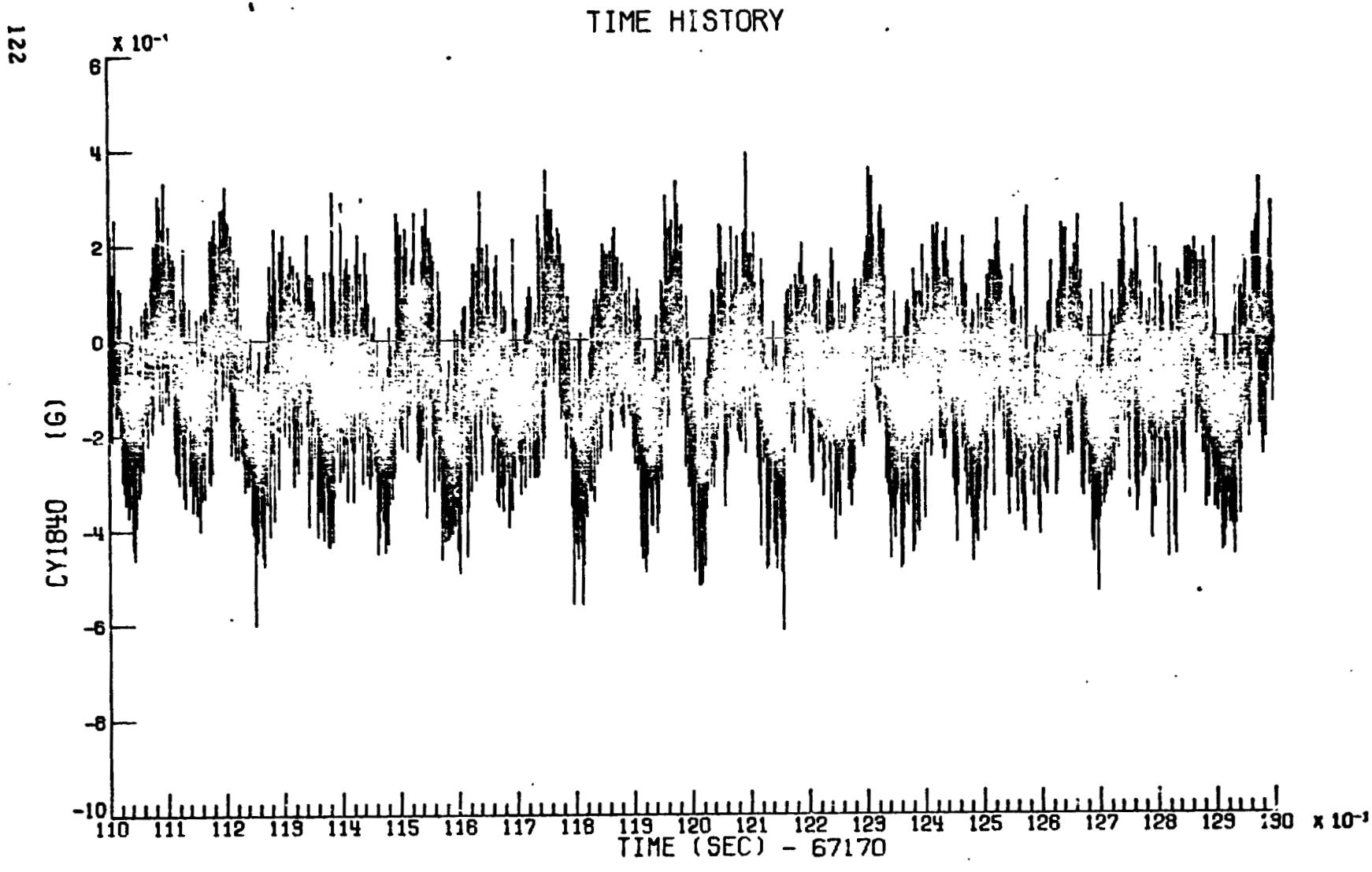
ΔF = .499 START = 67181.000 SEC STOP = 67182.999 SEC

MEAN = -14365×10^{-5} $\sigma^2 = 29767 \times 10^{-5}$ $\sigma = 17253 \times 10^{-5}$ $3\sigma = 6176 \times 10^{-4}$

VIKING B FLT (CIF) MAX Q - 2.5 CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75 4096 SPS

Figure 4.59b



MAX = .389

MIN = -

VIKING R FLT (CIF)

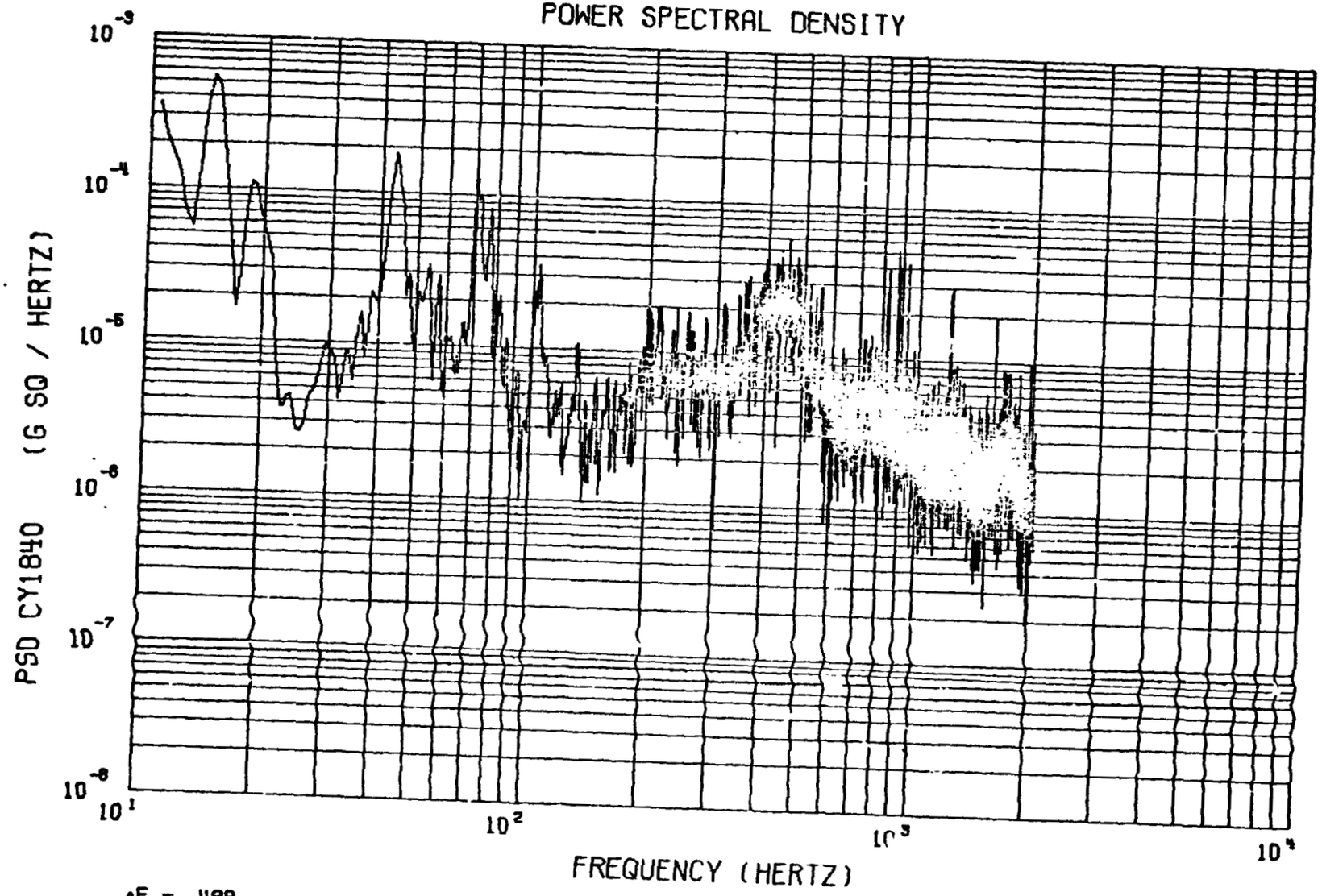
MAX Q - 2.5

4096 SPS

CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.60a



ΔF = .499

START = 67181.000 SEC

STOP = 67182.999 SEC

MEAN = -84746 x 10^{-8} σ^2 = 19564 x 10^{-5} σ = 13987 x 10^{-8} 3σ = 41961 x 10^{-8}

VIKING B FLT (CIF)

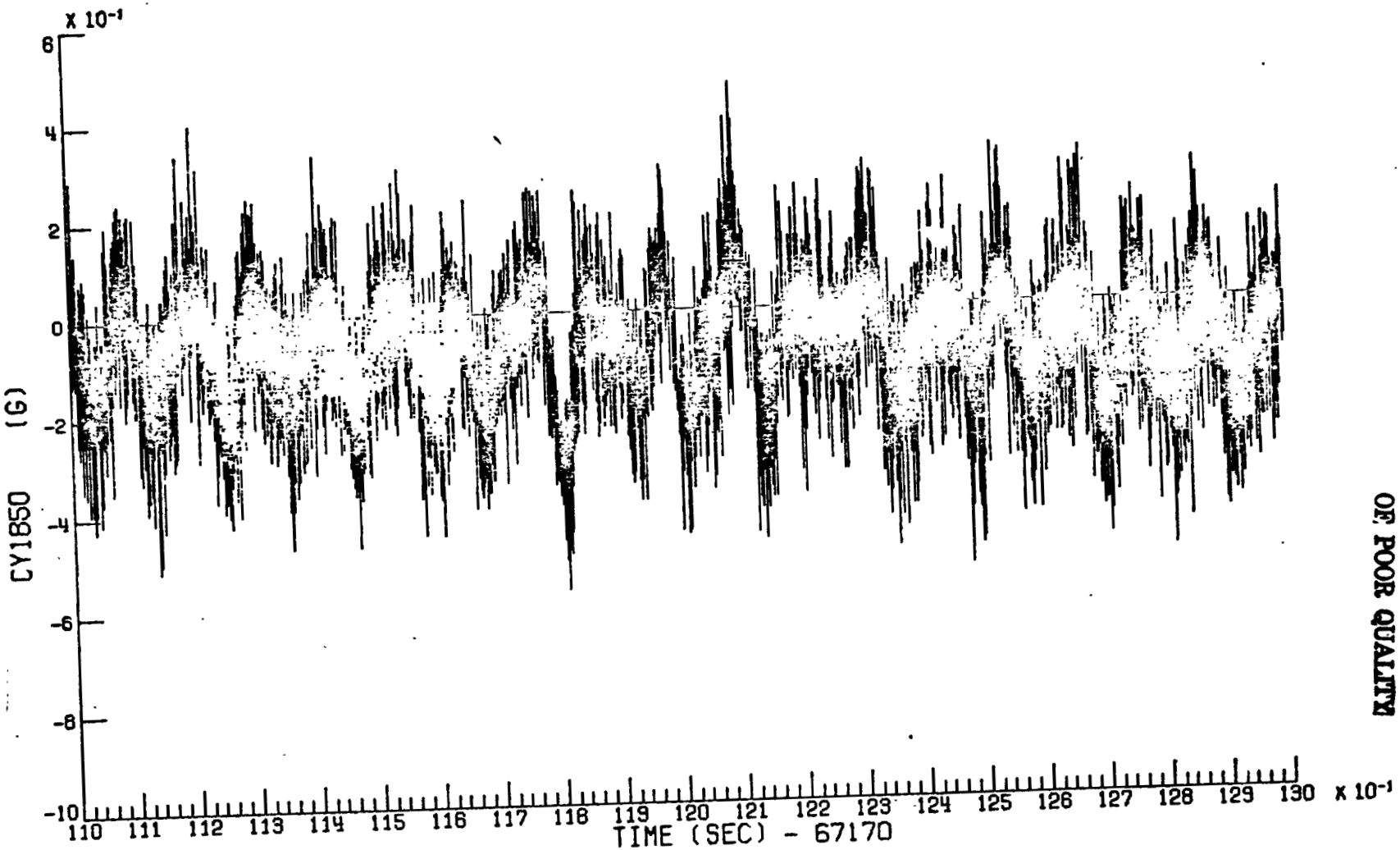
MAX Q - 2.5

CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4096 SPS

Figure 4.60b



MAX = .461

MIN = -.561

VIKING B FLT (CIF)

MAX Q - 2.5

4096 SPS

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.61a

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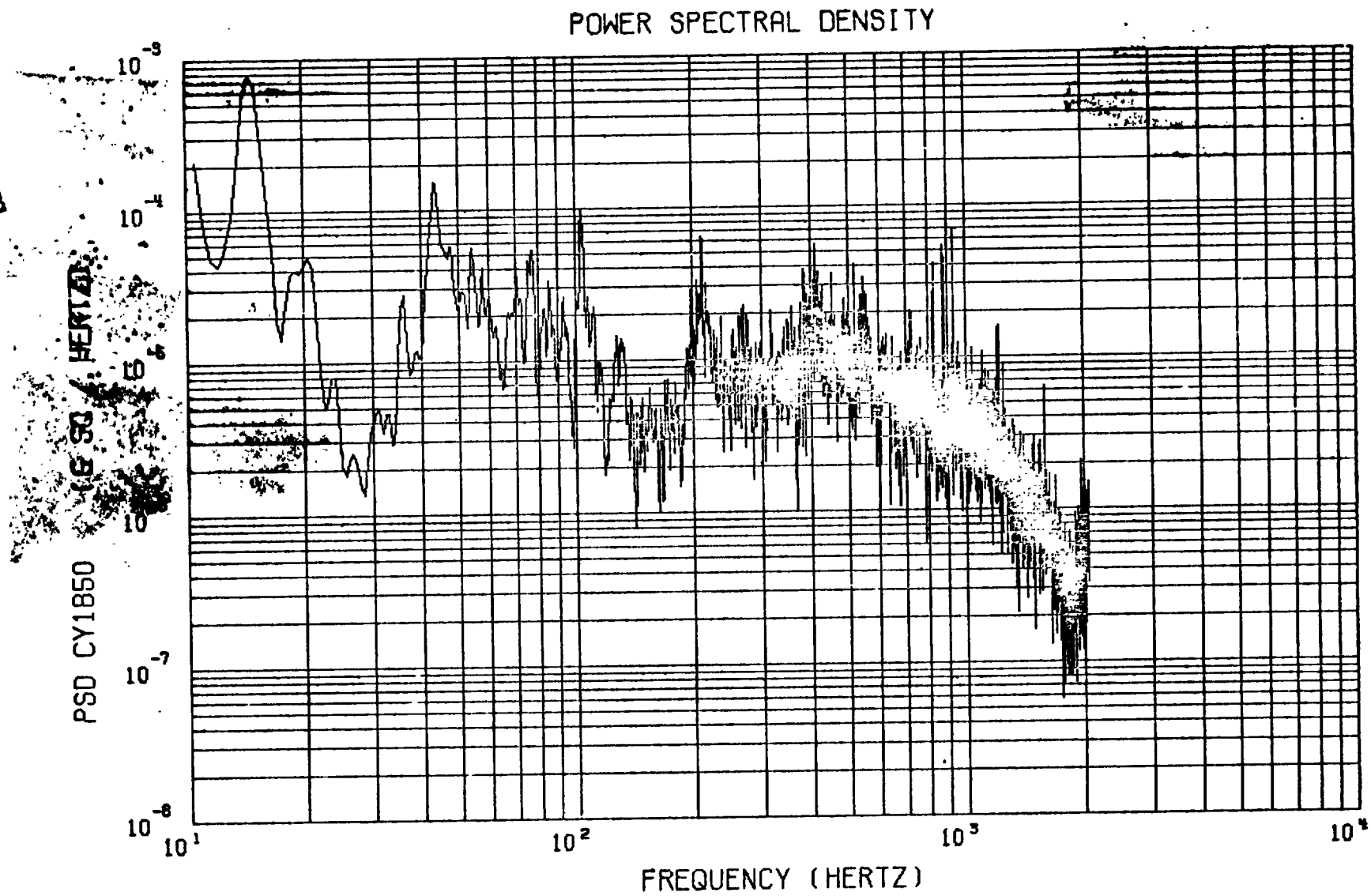


ΔF = .499 START = 67181.000 SEC STOP = 67182.999 SEC

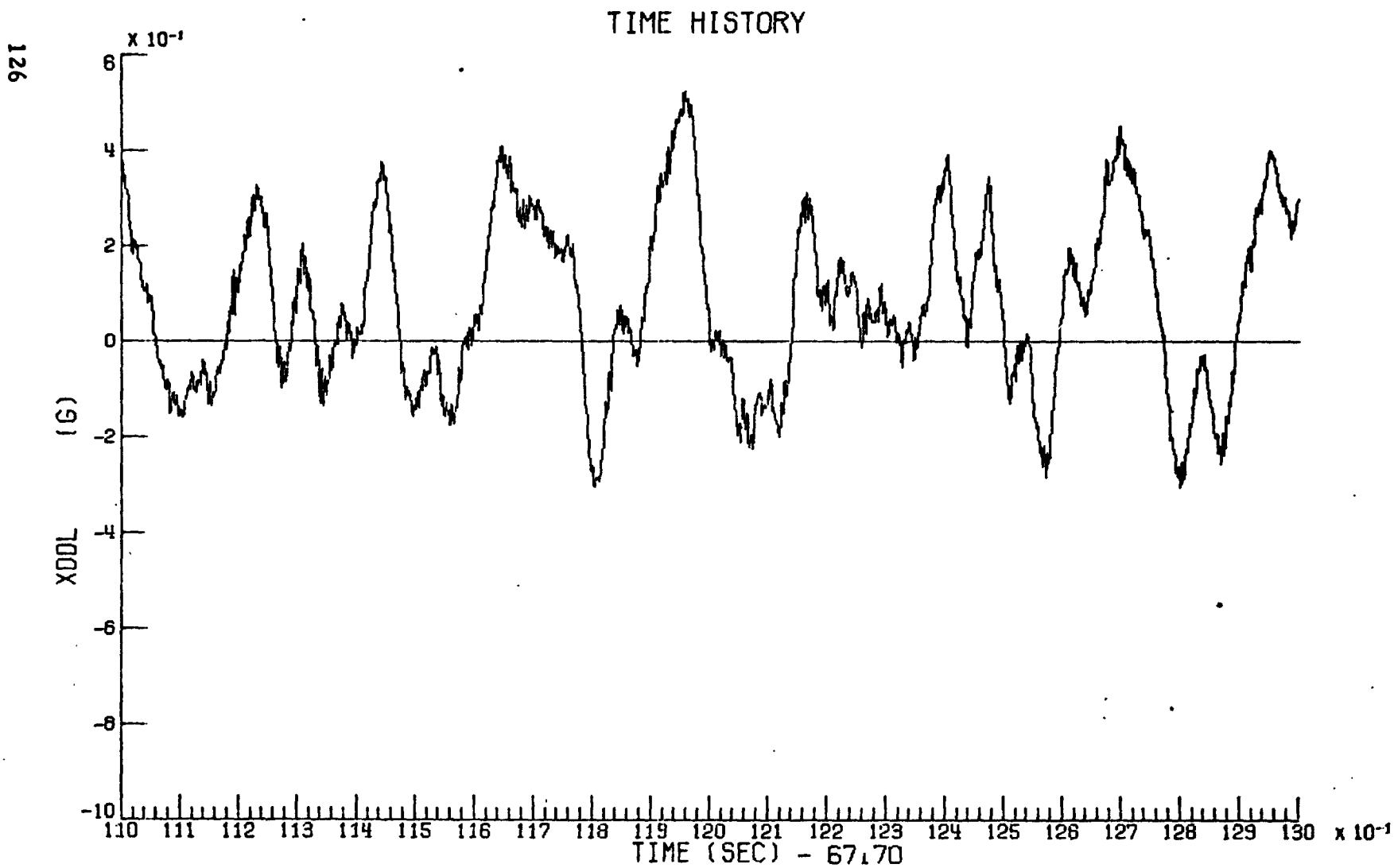
MEAN = -77164×10^{-6} $\sigma^2 = 18966 \times 10^{-6}$ $\sigma = 13768 \times 10^{-5}$ $3\sigma = 41306 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 2.5 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.61b

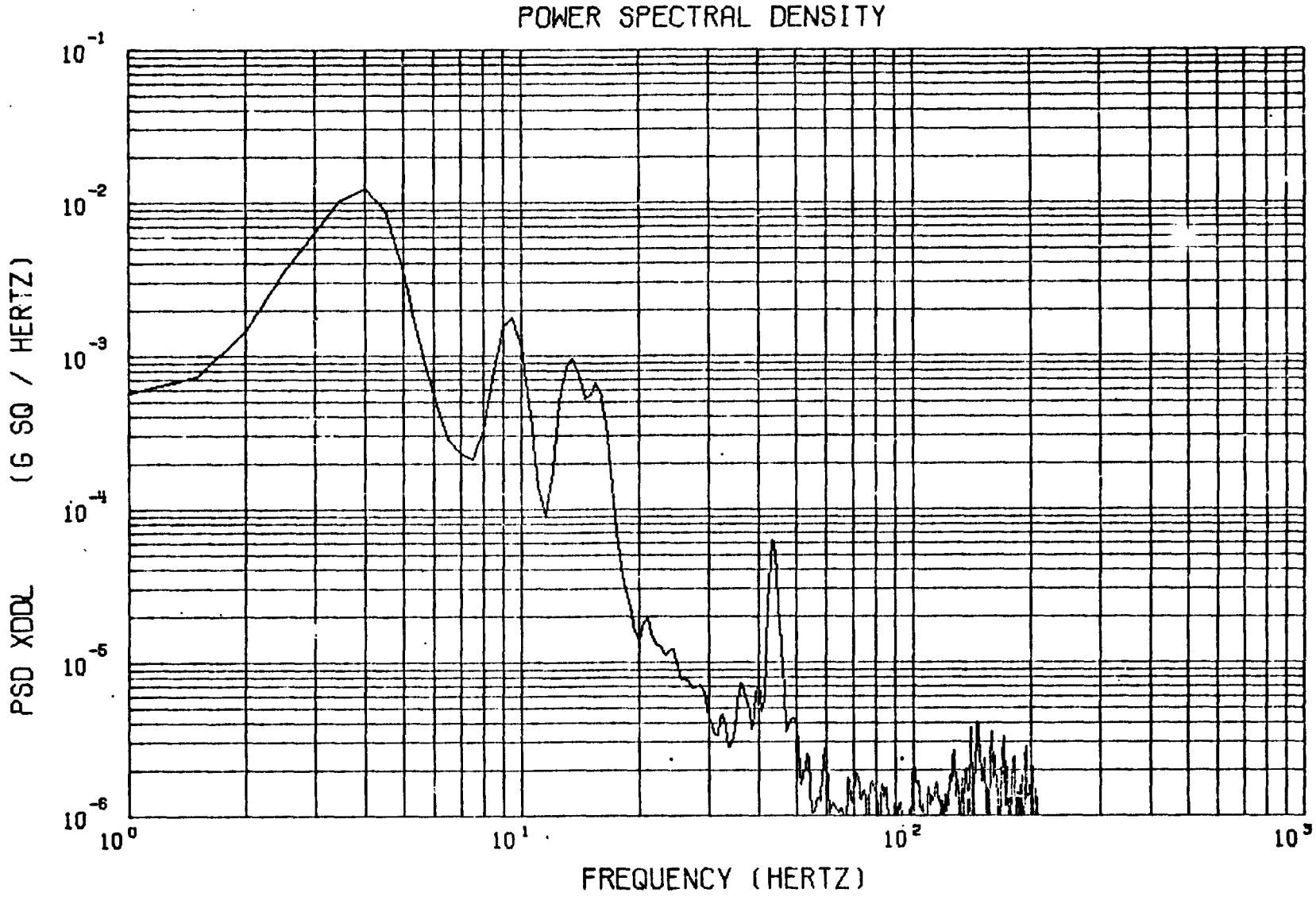


MAX = .523 MIN = -.304

VIKING B FLT (CIF) MAX Q - 2.5 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.62a



ΔF = .500 START = 67181.000 SEC STOP = 67182.999 SEC

MEAN = 78408 x 10^{-6} σ^2 = 32396 x 10^{-5} σ = 17998 x 10^{-5} 3σ = 53996 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2.5 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.62b

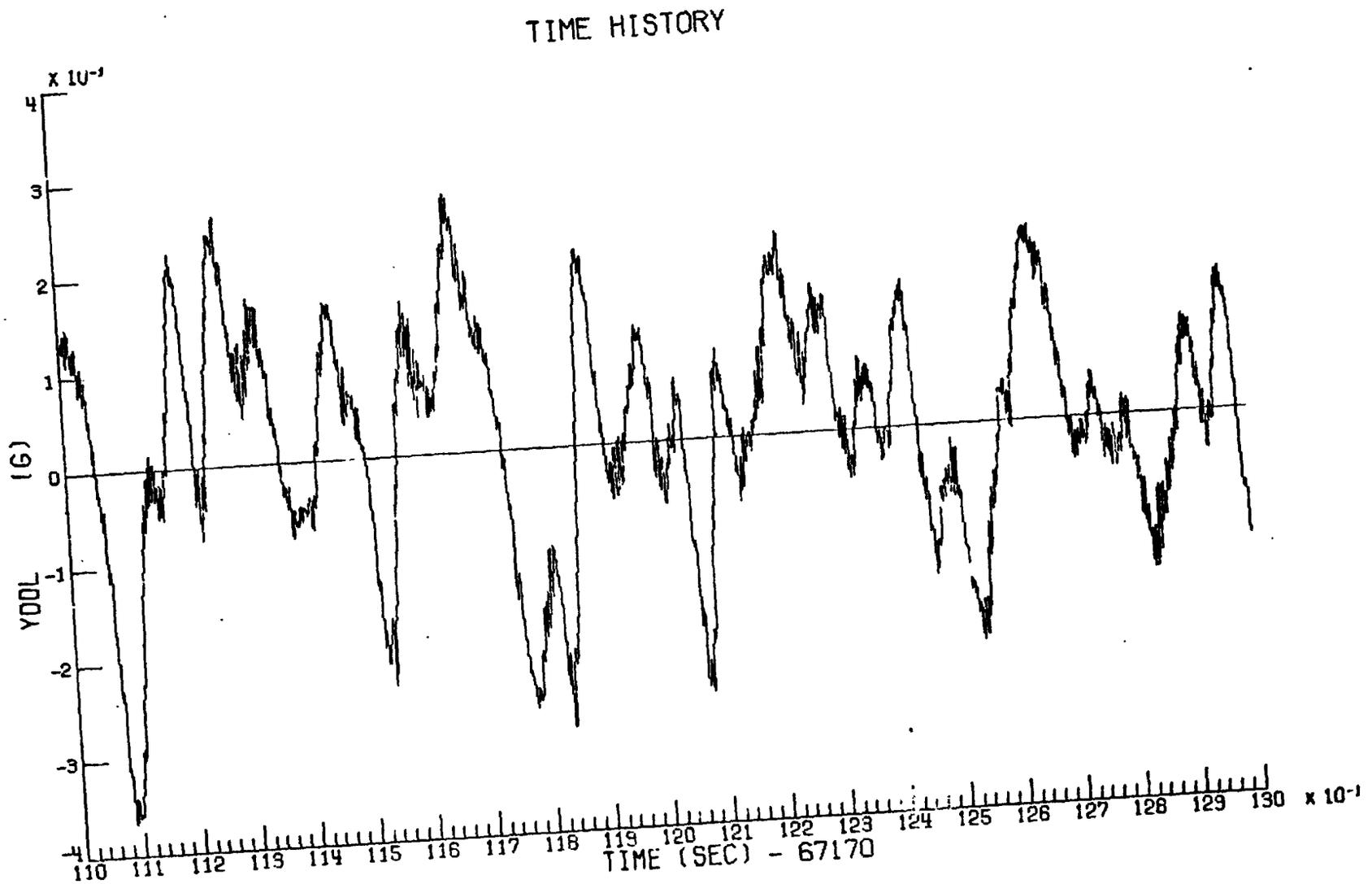
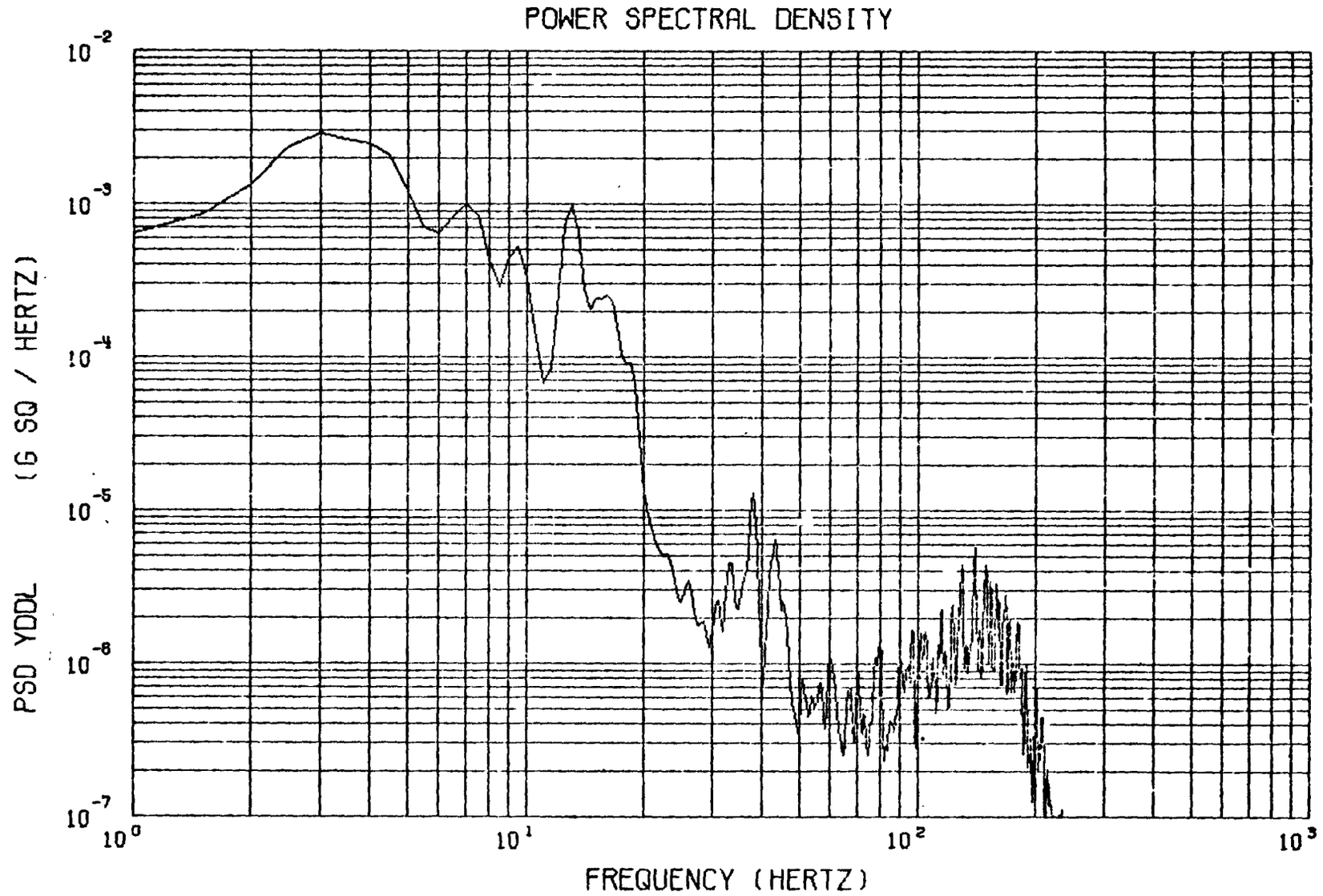

TIME HISTORY
X 10⁻¹
4
3
2
1
0
-1
-2
-3
-4
(G)
YDDL
110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 x 10⁻¹
TIME (SEC) - 67170
MAX = .270
MIN = -.365
VIKING B FLT (CIF)
MAX Q - 2.5
YDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.63a



ΔF = .500 START = 67181.000 SEC STOP = 67182.999 SEC

MEAN = 12139 x 10^{-5} σ^2 = 14234 x 10^{-5} σ = 11931 x 10^{-5} 3σ = 35793 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2.5 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.63b

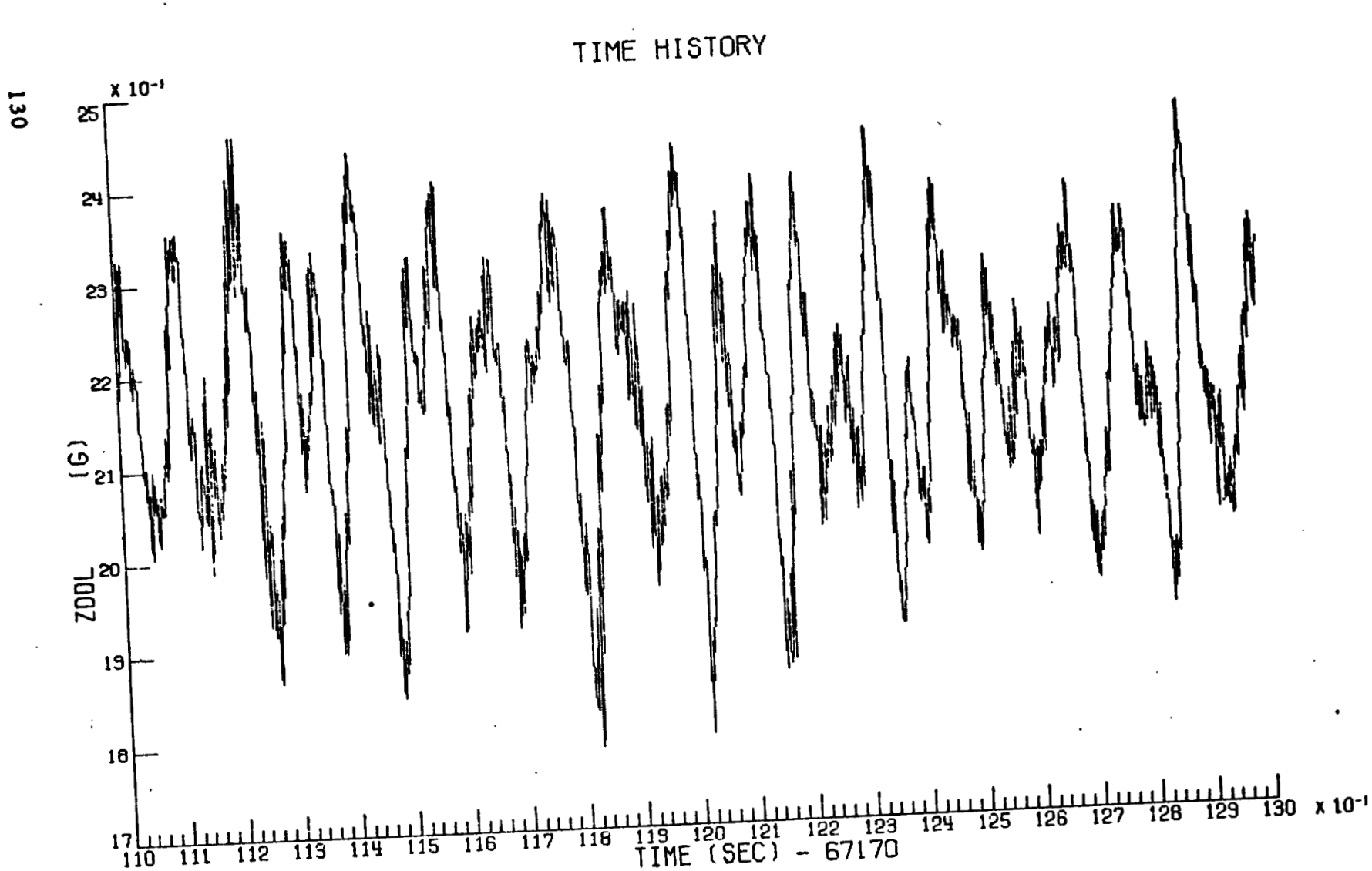
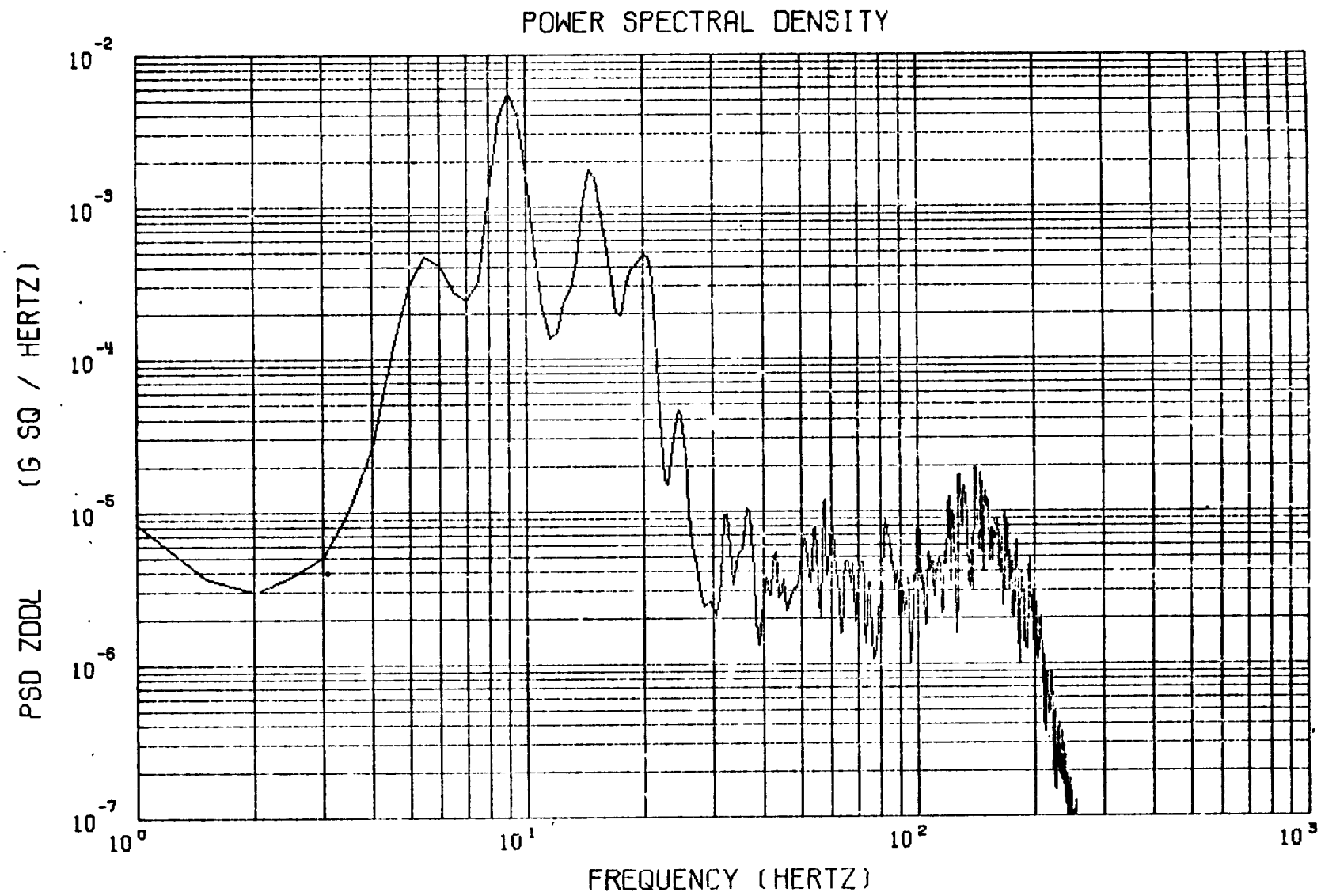

TIME HISTORY
130
x 10⁻¹
25
24
23
22
21
20
19
18
17
ZODL (G)
110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 x 10⁻¹
TIME (SEC) - 67170
MAX = 2.457
MIN = 1.787
VIKING B FLT (CIF)
MAX Q - 2.5
ZODL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.64a



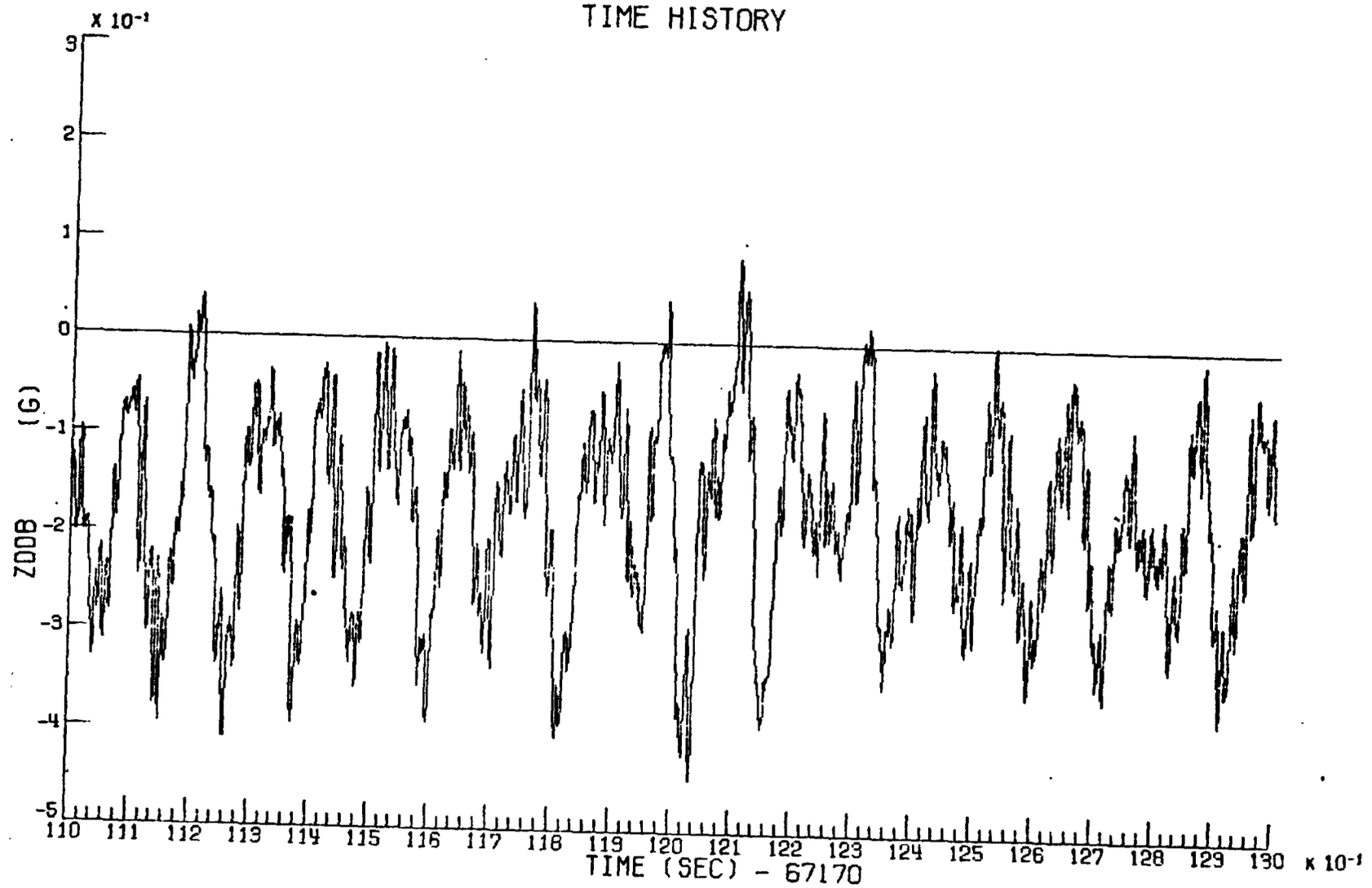
ΔF = .500 START = 67181.000 SEC STOP = 67182.999 SEC

MEAN = 21611 x 10^{-8} σ^2 = 16228 x 10^{-5} σ = 12739 x 10^{-5} 3σ = 38217 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2.5 ZDDL

NASA LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.64b



MAX = .087

MIN = -.446

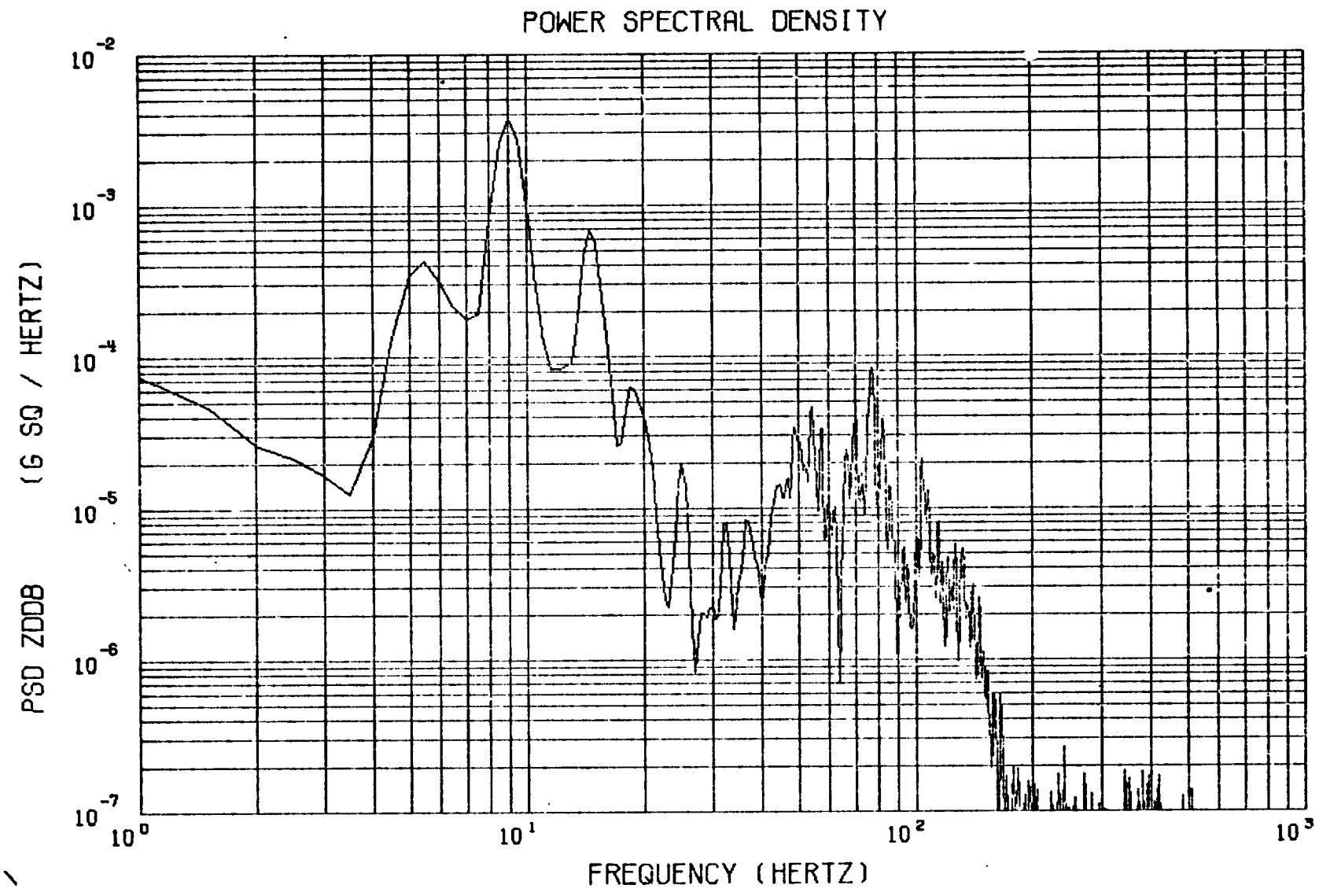
VIKING 8 FLT (CIF)

MAX Q - 2.5

ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.65a



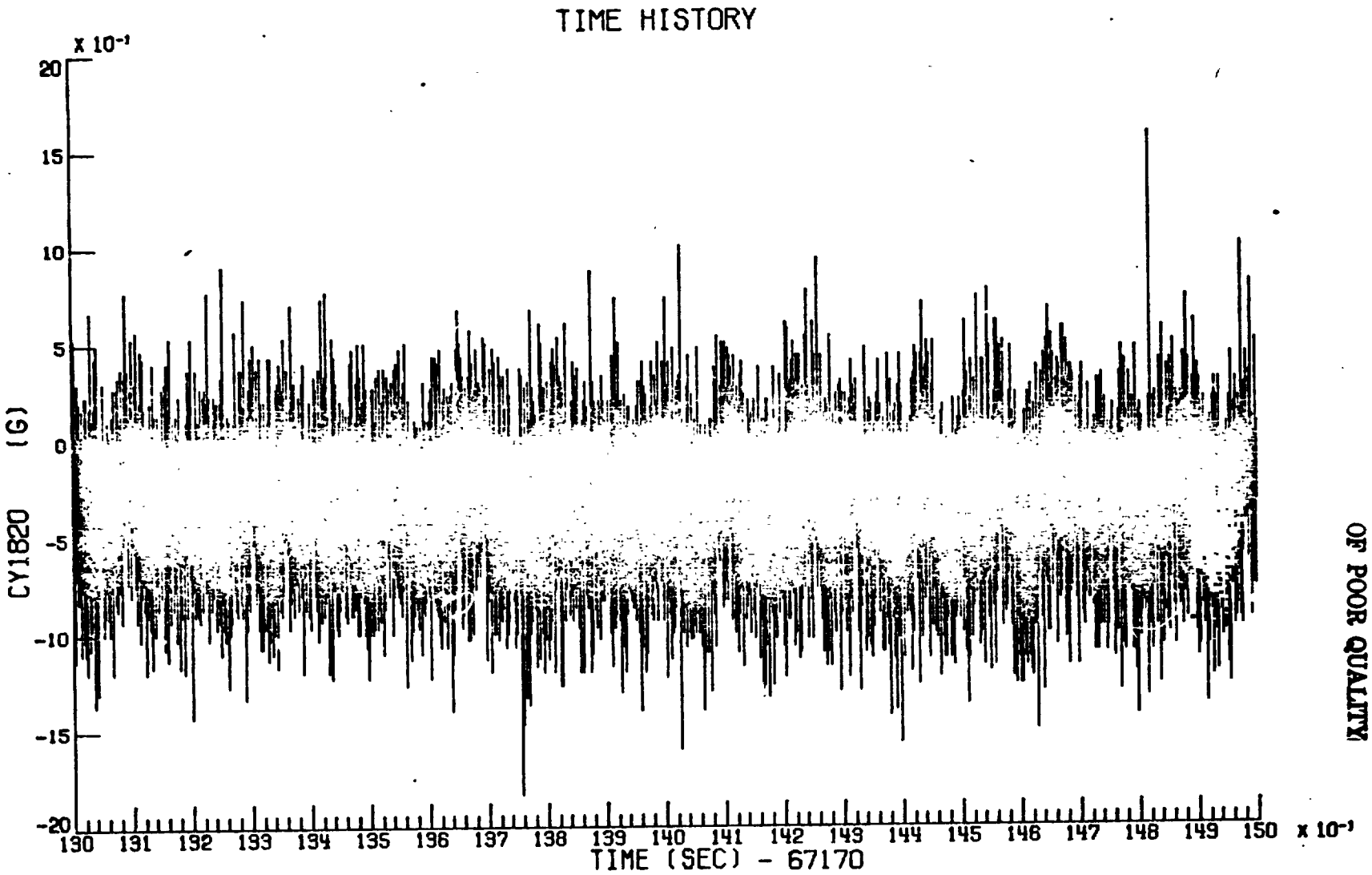
ΔF = .500 START = 67181.000 SEC STOP = 67182.999 SEC

MEAN = -17774 x 10^{-5} σ^2 = 9563 x 10^{-6} σ = 97739 x 10^{-5} 3σ = 29321 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 2.5 ZDD6

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.65b



MAX = 1.567

MIN = -1.834

VIKING B FLT (CIF)

MAX Q - 3

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM ` 09/22/75

Figure 4.66a

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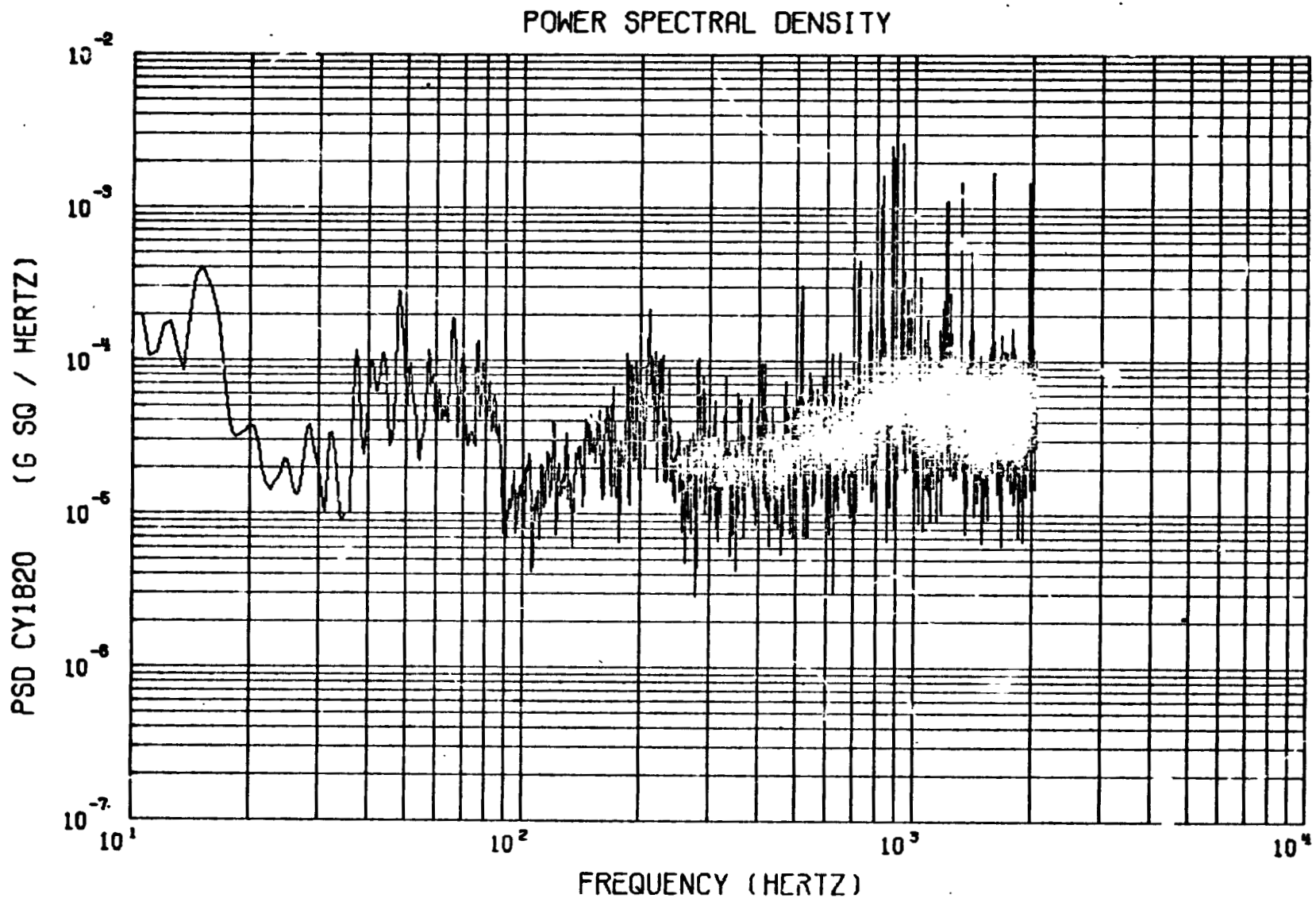


ΔF = .499 START = 67183.000 SEC STOP = 67184.999 SEC

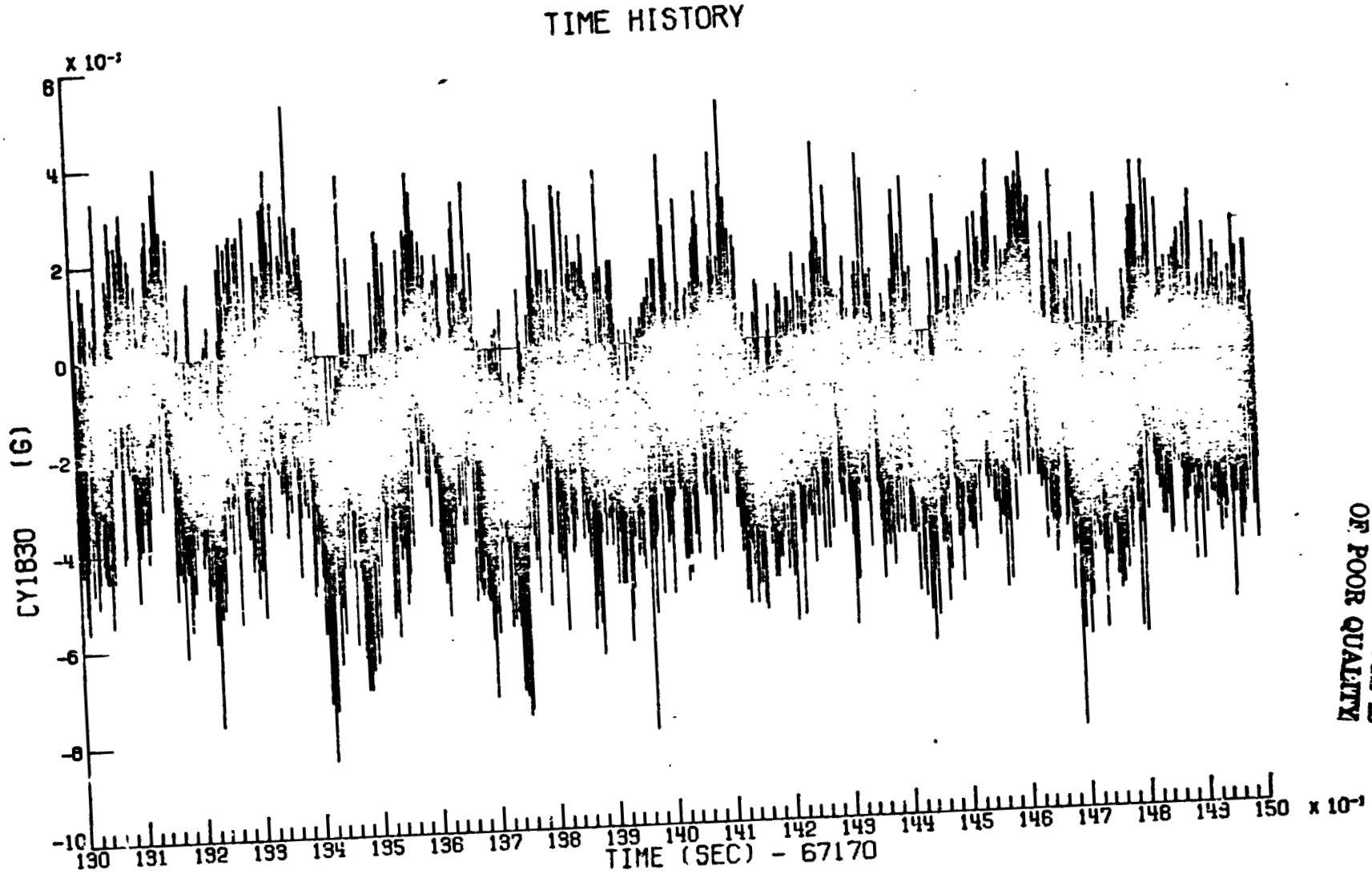
MEAN = -30529 x 10^{-5} σ^2 = 12191 x 10^{-5} σ = 34916 x 10^{-5} 3σ = 10476 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09, /75

Figure 4.66b



MAX = .520

MIN = -.841

VIKING B FLT (CIF)

MAX Q - 3

4096 SPS

CY1830

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.67a

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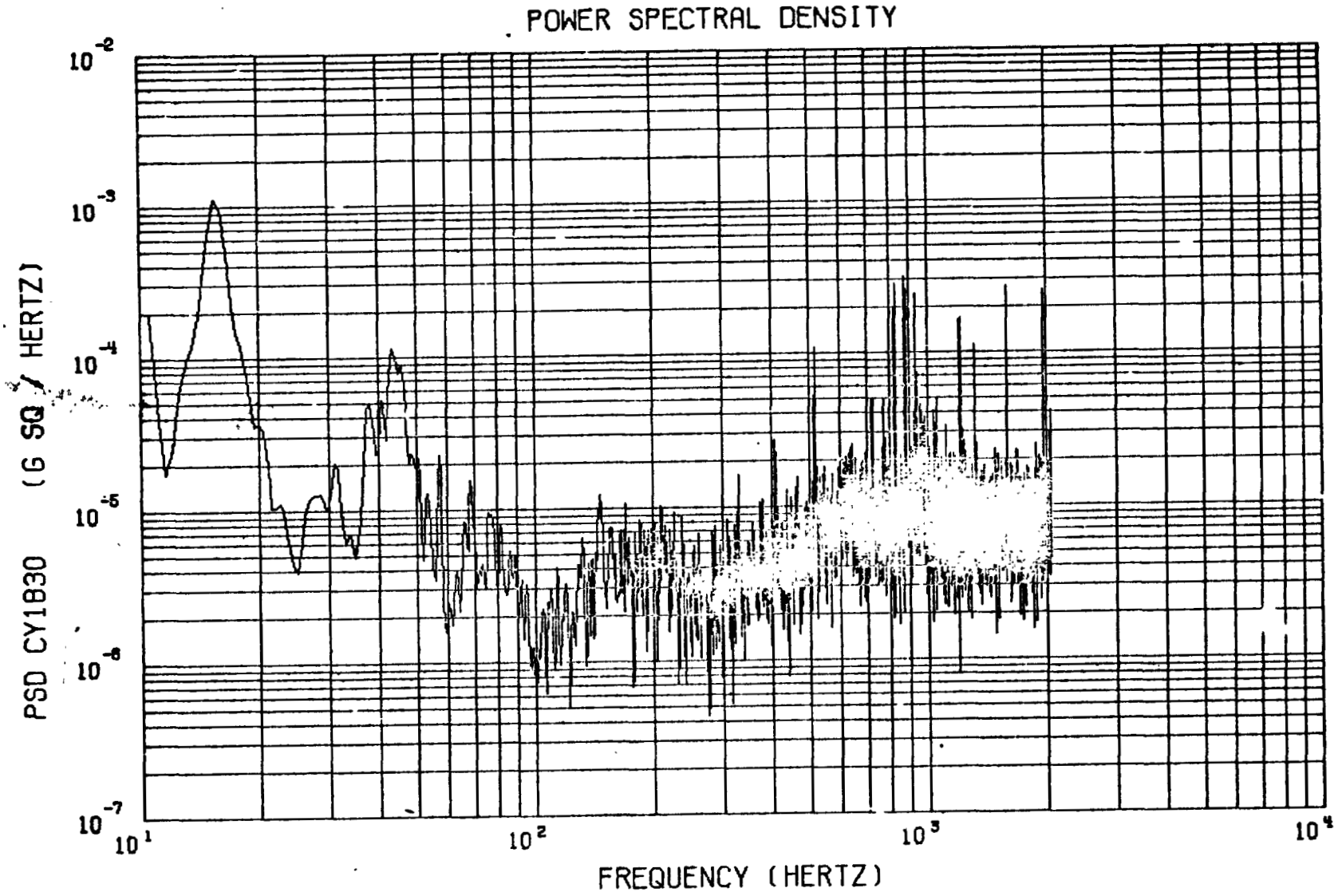


ΔF = .499 START = 67183.000 SEC STOP = 67184.999 SEC

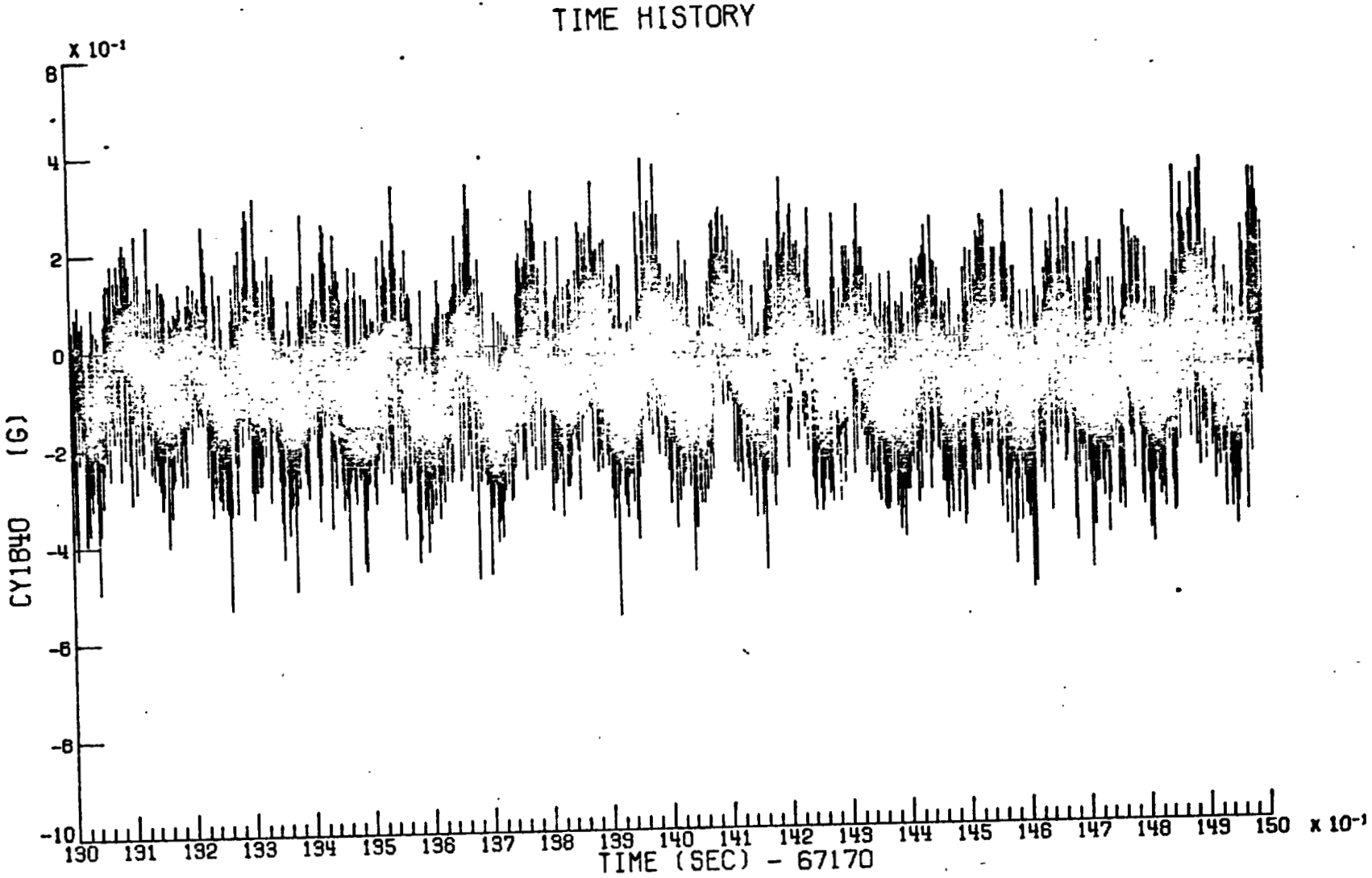
MEAN = -13322×10^{-5} $\sigma^2 = 2803 \times 10^{-5}$ $\sigma = 16742 \times 10^{-5}$ $3\sigma = 50226 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 3 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.67b



MAX = .378

MIN = -.556

VIKING B FLT (CIF)

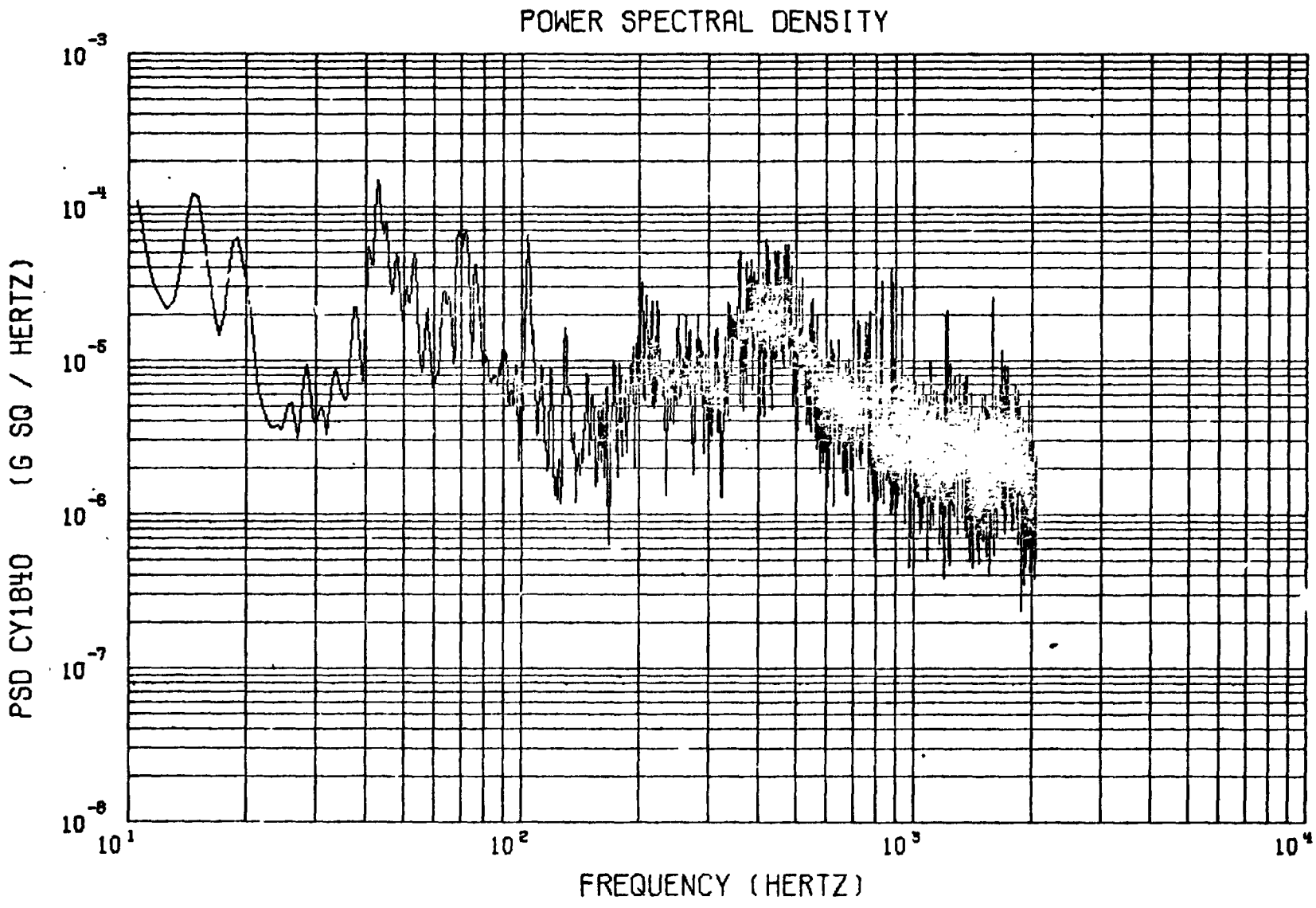
MAX Q - 3

4096 SPS

CY1840

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.68a



ΔF = .499 START = 67183.000 SEC STOP = 67184.999 SEC

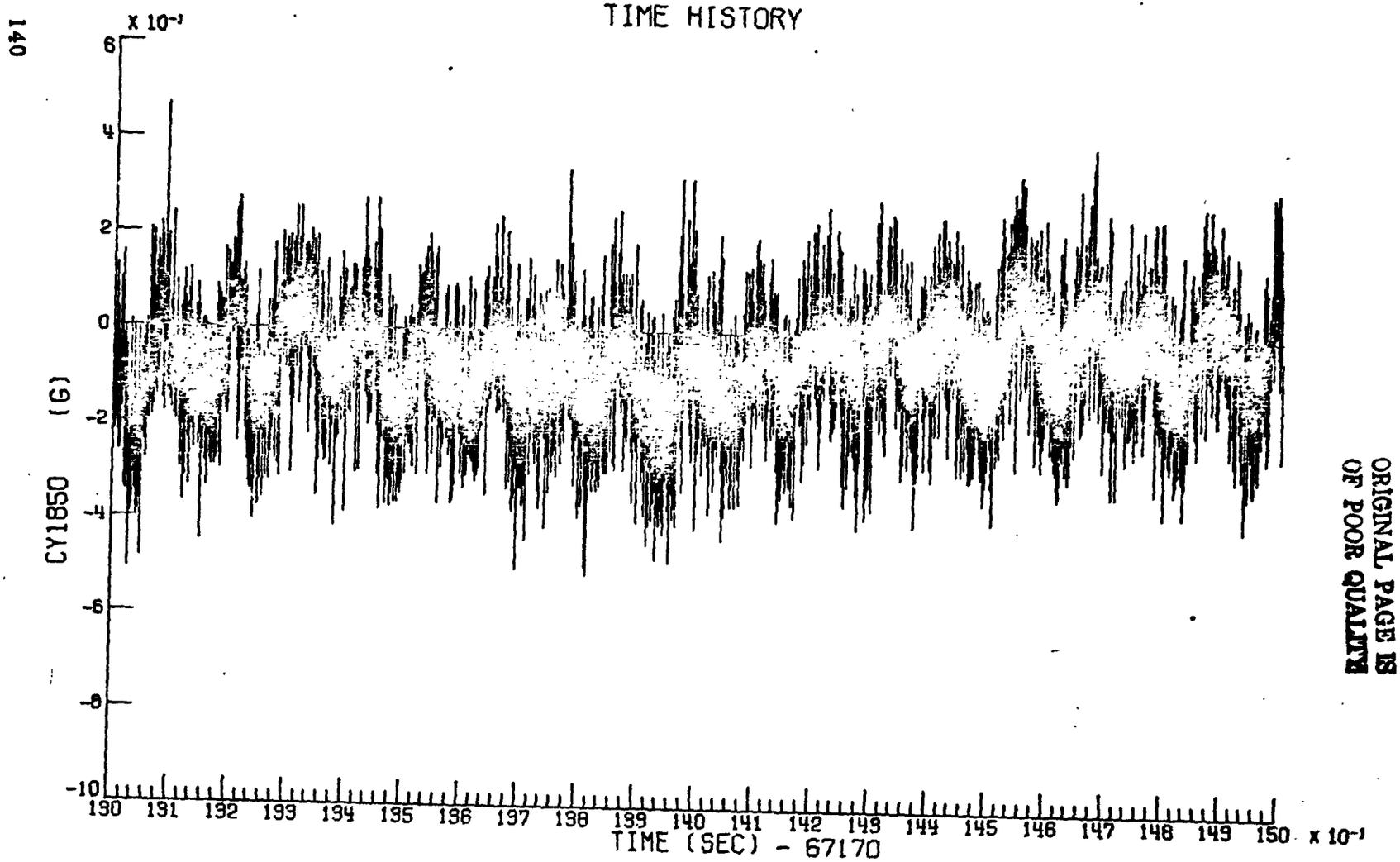
MEAN = -67874×10^{-8} $\sigma^2 = 16419 \times 10^{-5}$ $\sigma = 12814 \times 10^{-8}$ $3\sigma = 38442 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 3 CY1840

4096 sps

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.68b



MAX = .467

MIN = -.511

VIKING B FLT (CIF)

MAX Q - 3

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

4096 SPS

Figure 4.69a

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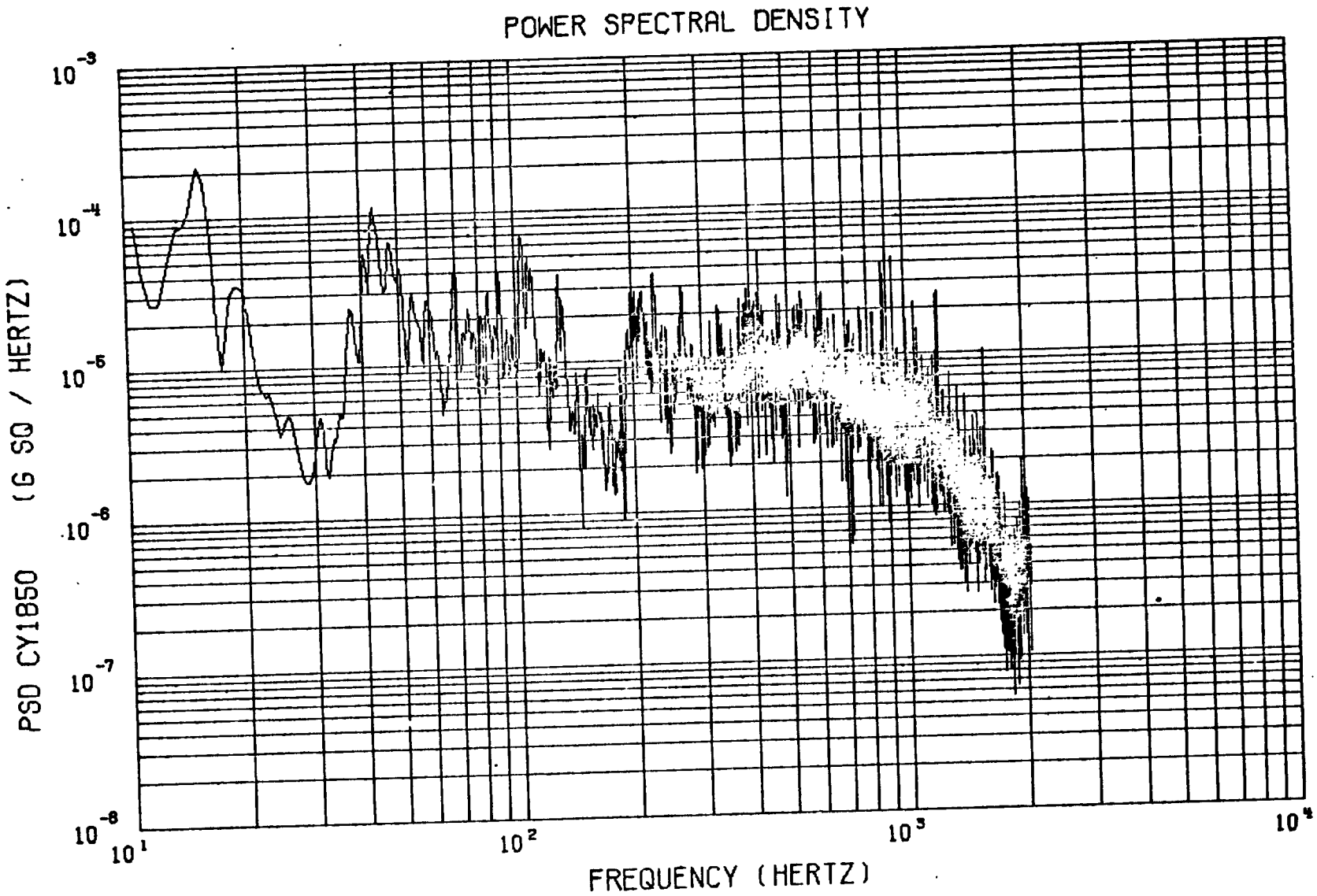


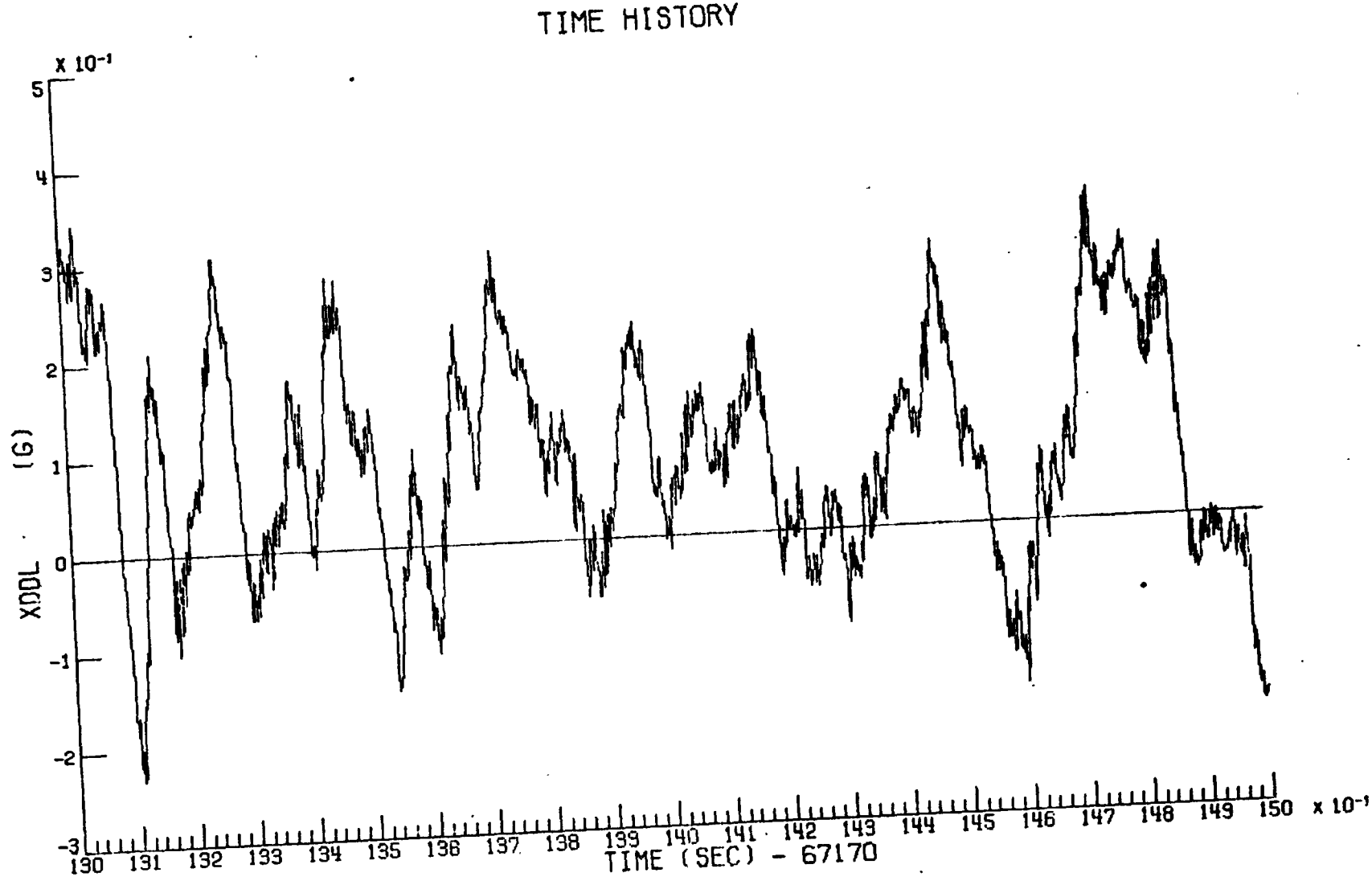
ΔF = .499 START = 67183.000 SEC STOP = 67184.999 SEC

MEAN = -61629×10^{-8} $\sigma^2 = .1598 \times 10^{-5}$ $\sigma = 12641 \times 10^{-5}$ $3\sigma = 37923 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 3 CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.69b



MAX = .345

MIN = -.230

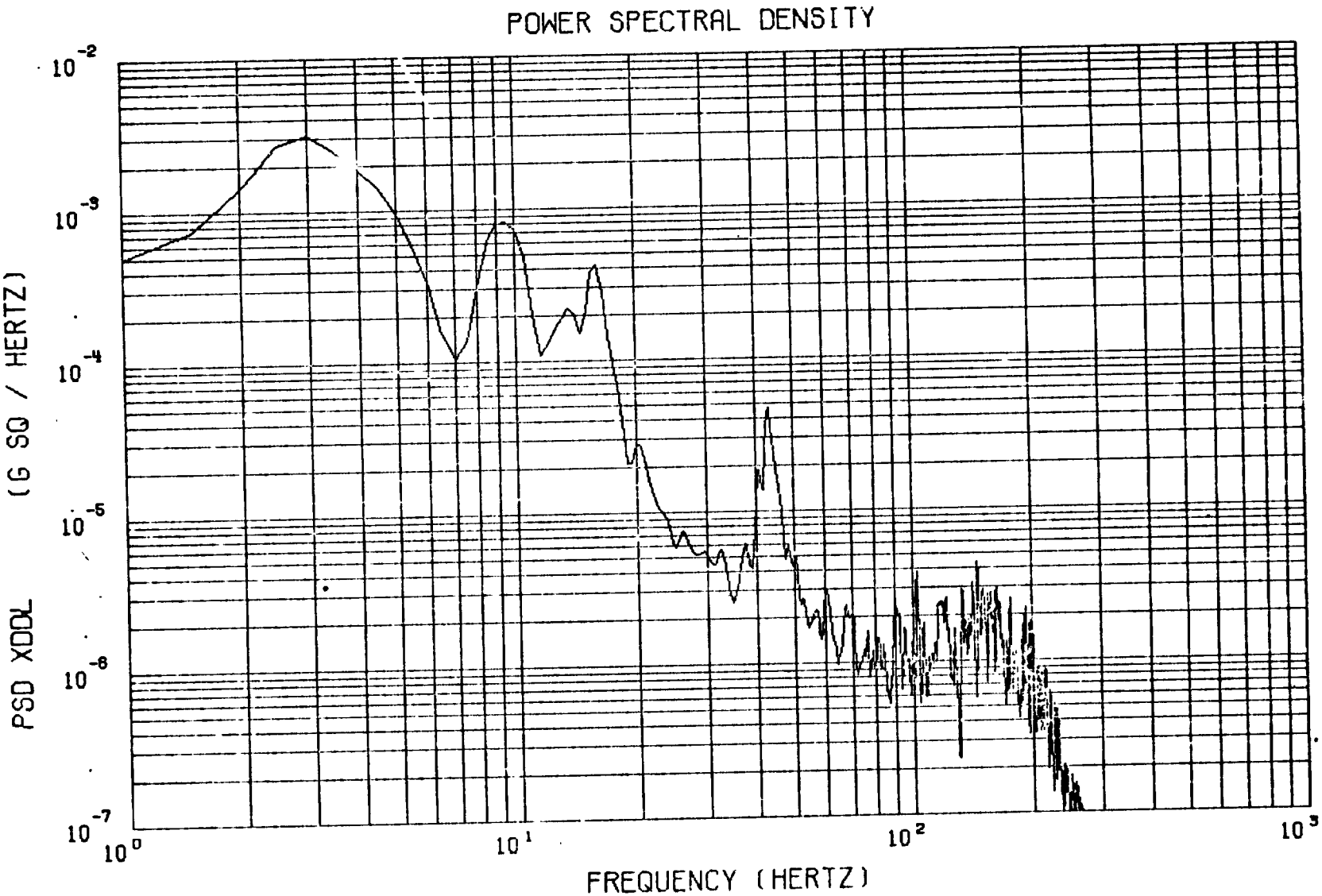
MAX Q - 3

XDDL

VIKING B FLT (CIF)

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.70a



ΔF = .500 START = 67183.000 SEC STOP = 67184.999 SEC

MEAN = 82454 x 10^{-6} σ^2 = 12426 x 10^{-5} σ = 11147 x 10^{-6} 3σ = 33442 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.70b

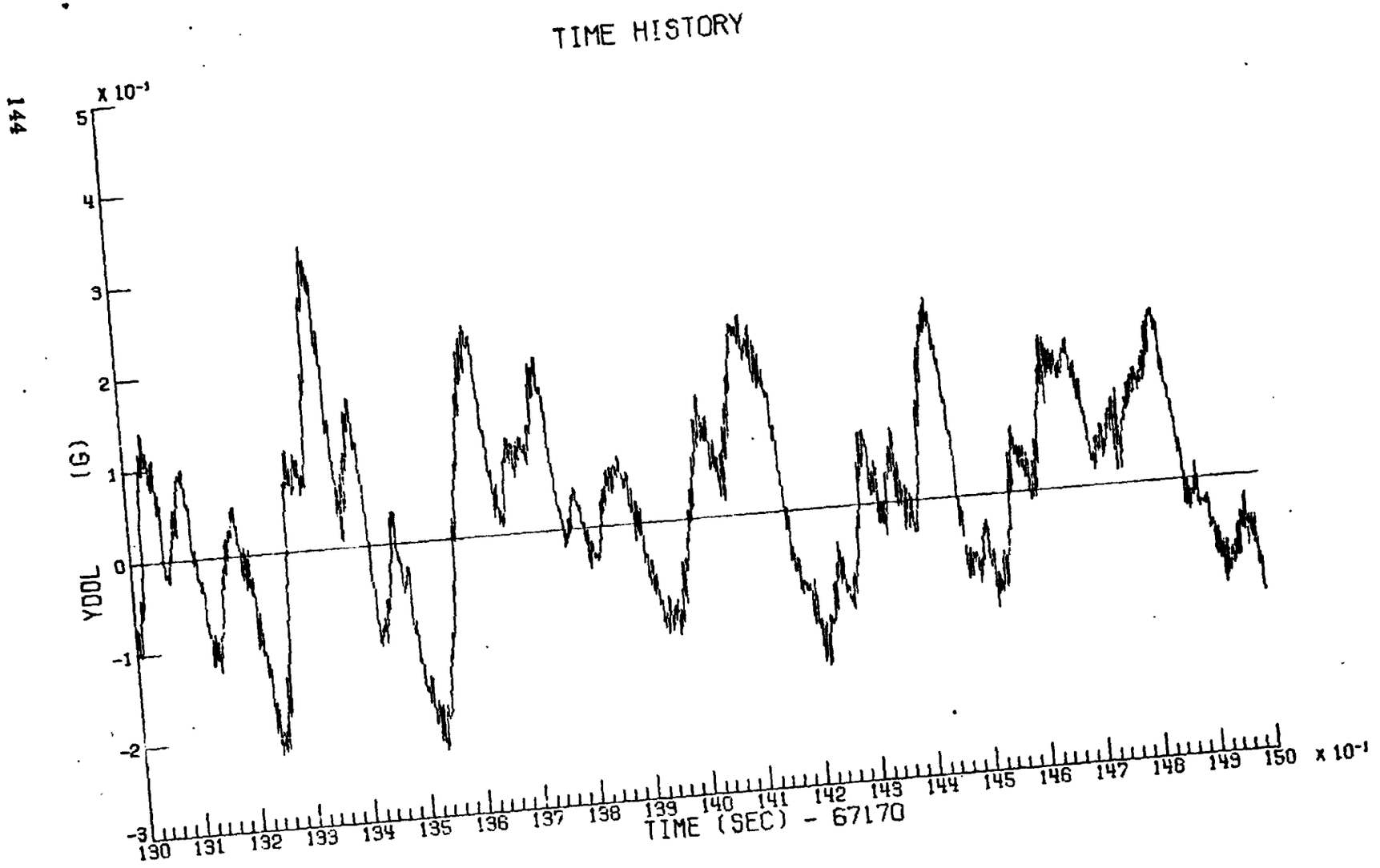
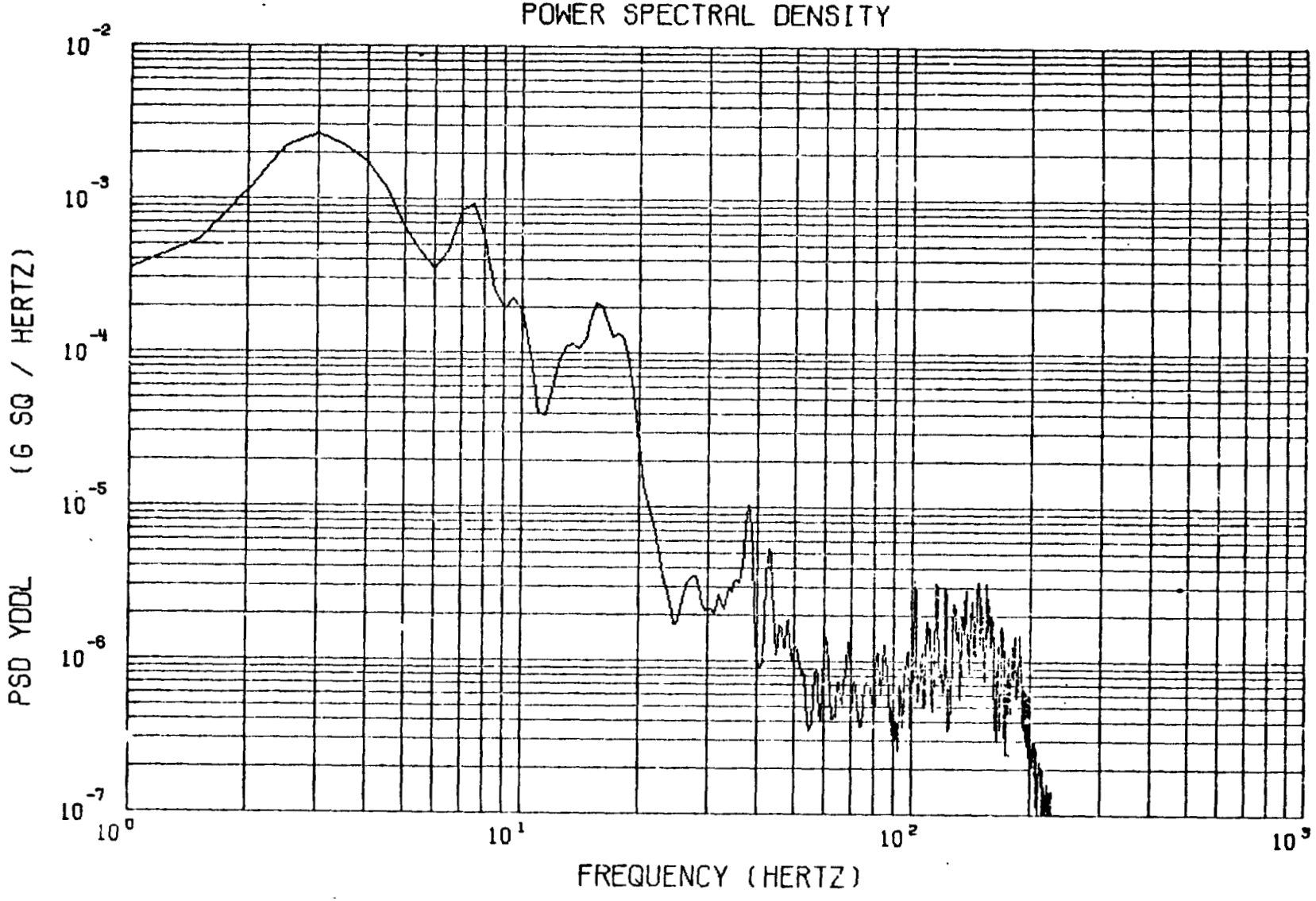

TIME HISTORY
144
X 10⁻¹
5
4
3
2
1
0
-1
-2
-3
YDDL
(G)
130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 X 10⁻¹
TIME (SEC) - 67170
MAX = .330
MIN = -.227
VIKING B FLT (CIF)
MAX Q - 3
YDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 03/23/75

Figure 4.71a



ΔF = .500 START = 67183.000 SEC STOP = 67184.999 SEC

MEAN = 23107 x 10^{-5} σ^2 = 10111 x 10^{-5} σ = 10055 x 10^{-5} 3σ = 30166 x 10^{-5}

VIKING 6 FLT (CIF) MAX Q - 3 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.71b

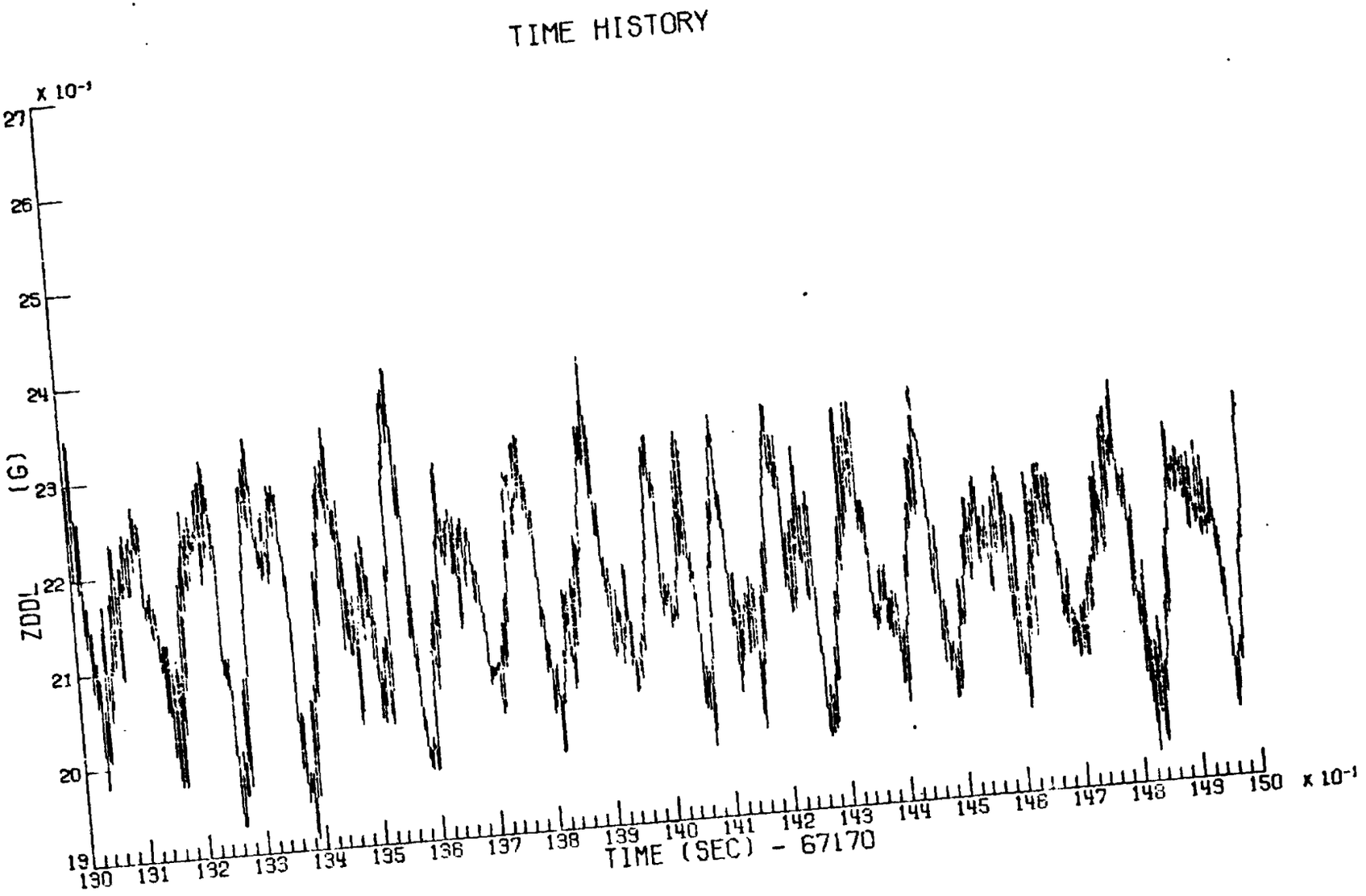
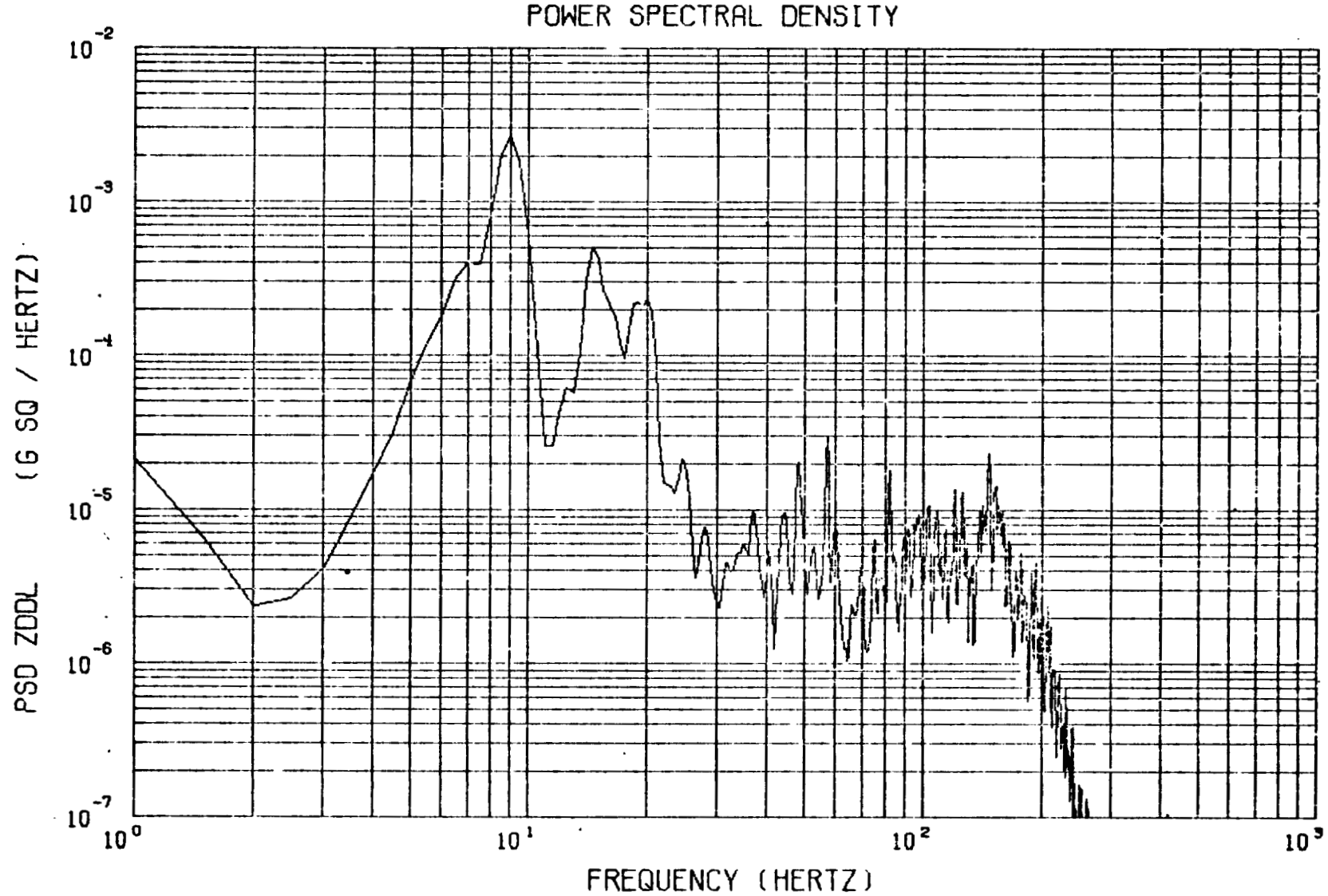

TIME HISTORY
x 10⁻¹
27
26
25
24
23
22
21
20
19
ZDDL (G)
130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 x 10⁻¹
TIME (SEC) - 67170
MAX = 2.397
MIN = 1.912
VIKING B FLT (CIF)
MAX 0 - 3
ZDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.72a



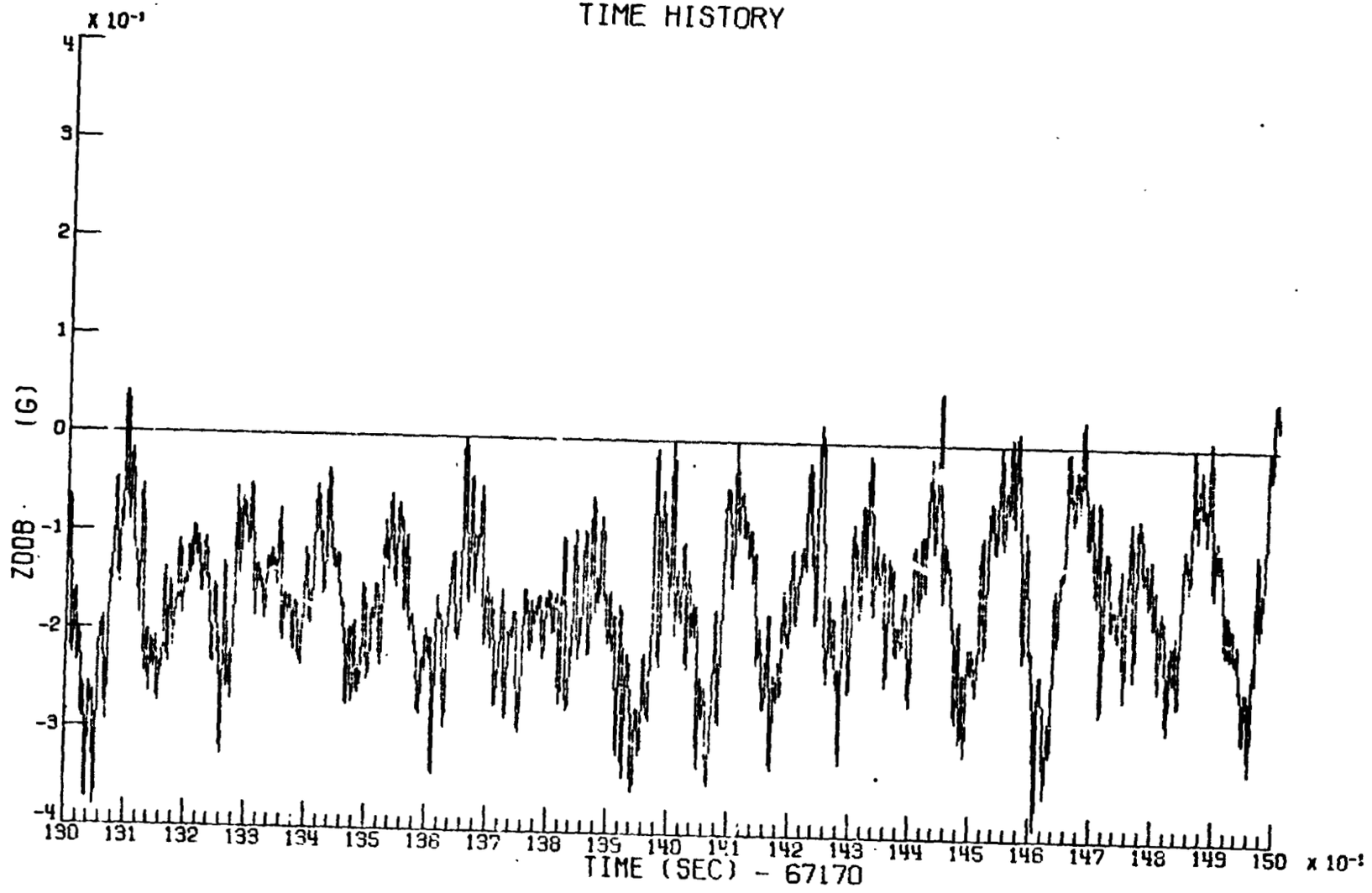
ΔF = .500 START = 67183.000 SEC STOP = 67184.999 SEC

MEAN = 21541 x 10^{-4} σ^2 = 77263 x 10^{-7} σ = 87899 x 10^{-5} 3σ = 26369 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3 . ZDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.72b



MAX = .052

MIN = -.388

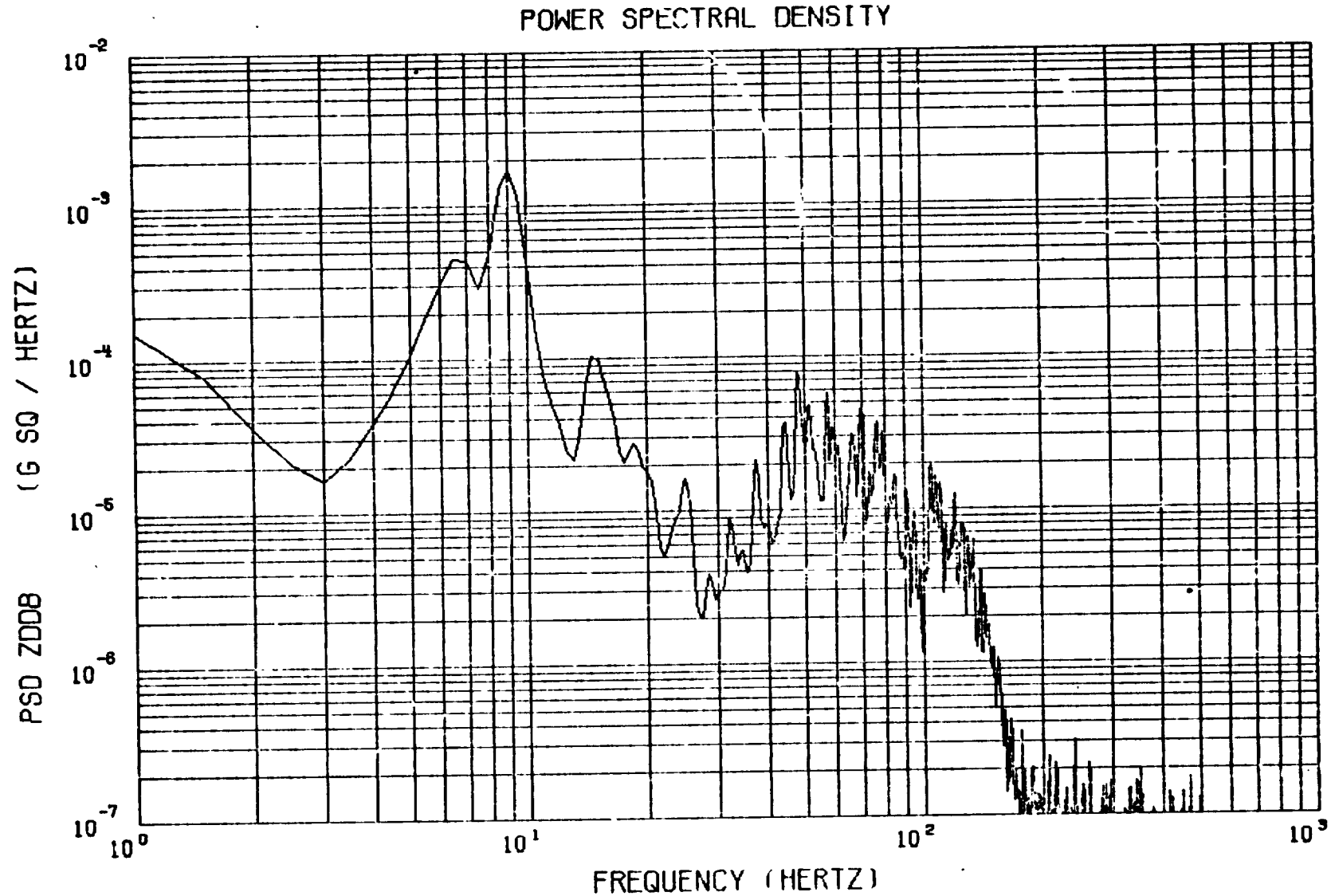
VIKING B FLT (CIF)

MAX Q - 3

ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.73a



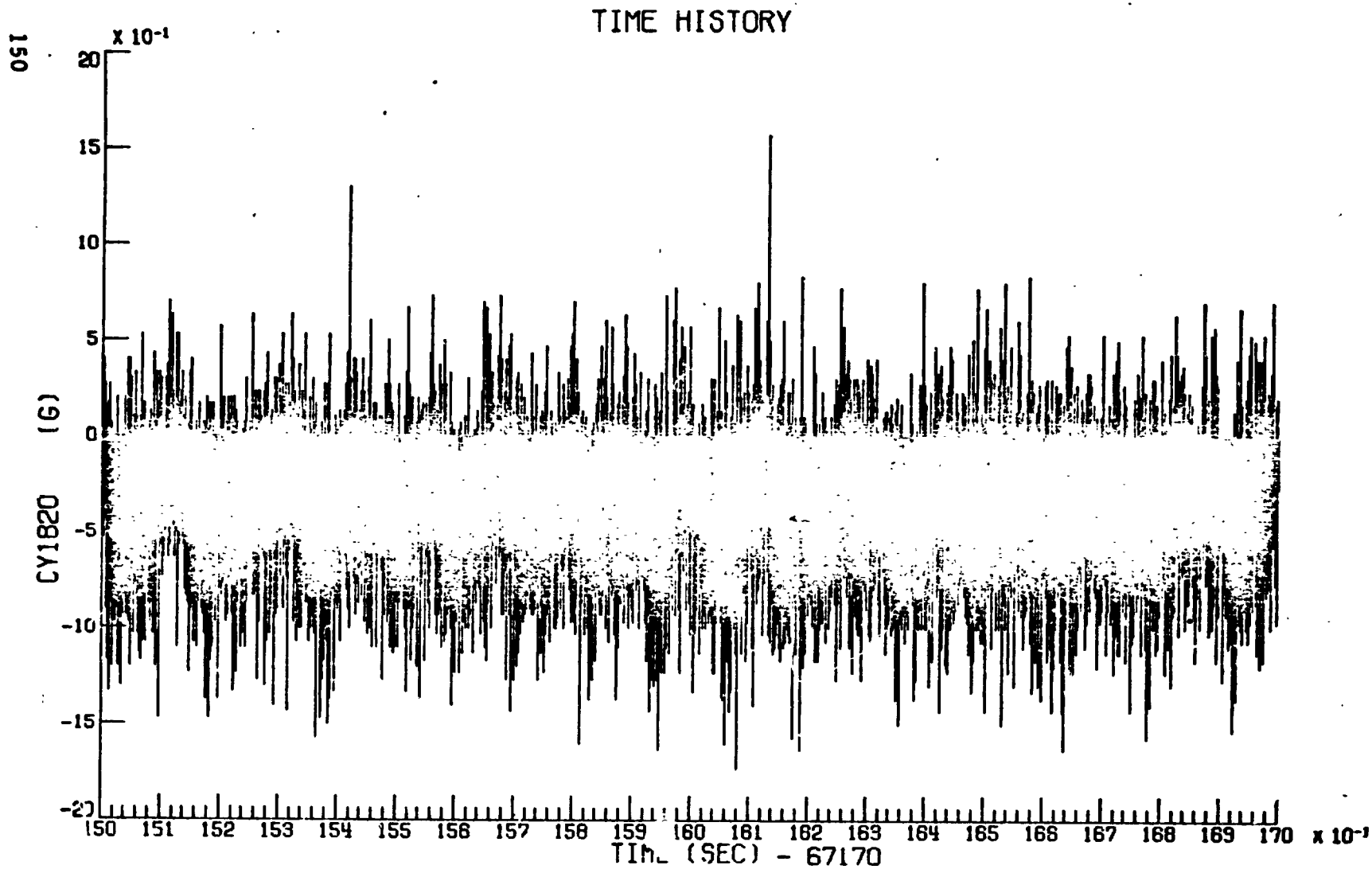
ΔF = .500 START = 67183.000 SEC STOP = 67184.999 SEC

MEAN = -16359 x 10^{-5} σ^2 = 58362 x 10^{-7} σ = 76395 x 10^{-5} 3σ = 22918 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.73b



MAX = 1.567

MIN = -1.734

VIKING B FLT (CIF)

MAX Q - 3.5

4096 SPS

CY1820

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.74a

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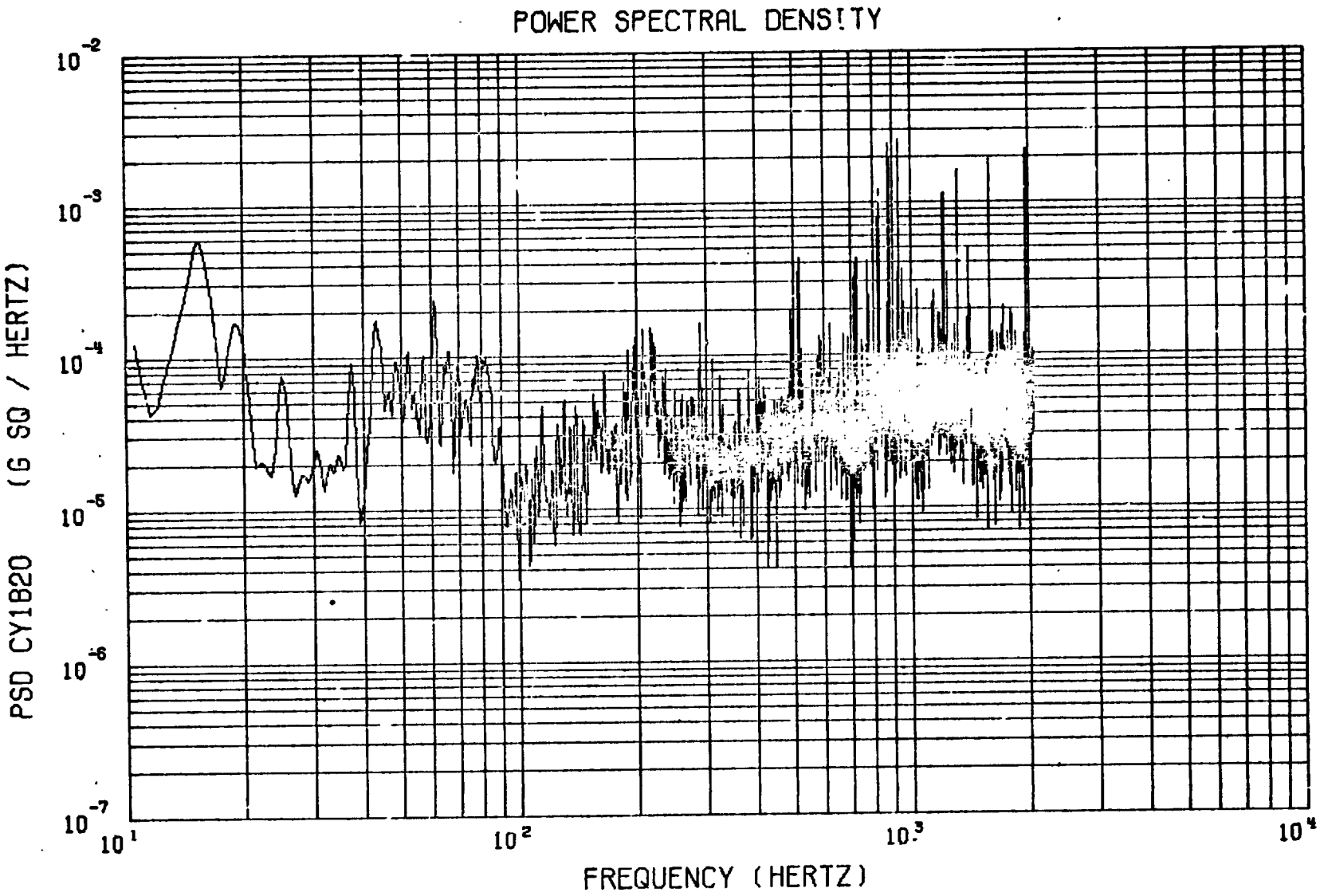


ΔF = .499 START = 67185.000 SEC STOP = 67186.999 SEC

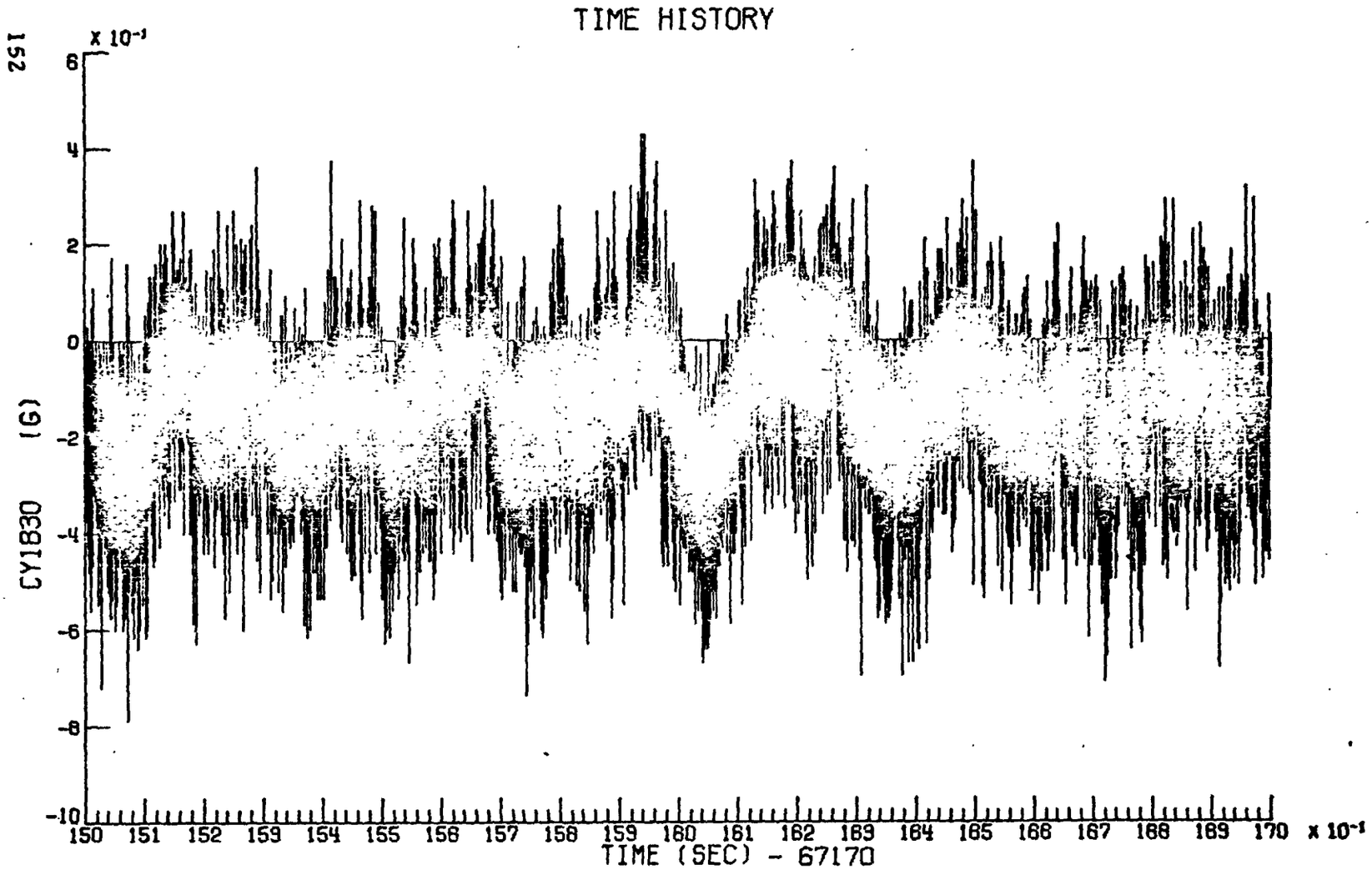
MEAN = -33303×10^{-8} $\sigma^2 = 12602 \times 10^{-8}$ $\sigma = 35499 \times 10^{-8}$ $3\sigma = 10649 \times 10^{-8}$

VIKING B FLT (CIF) MAX Q - 3.5 CY1820

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.74b



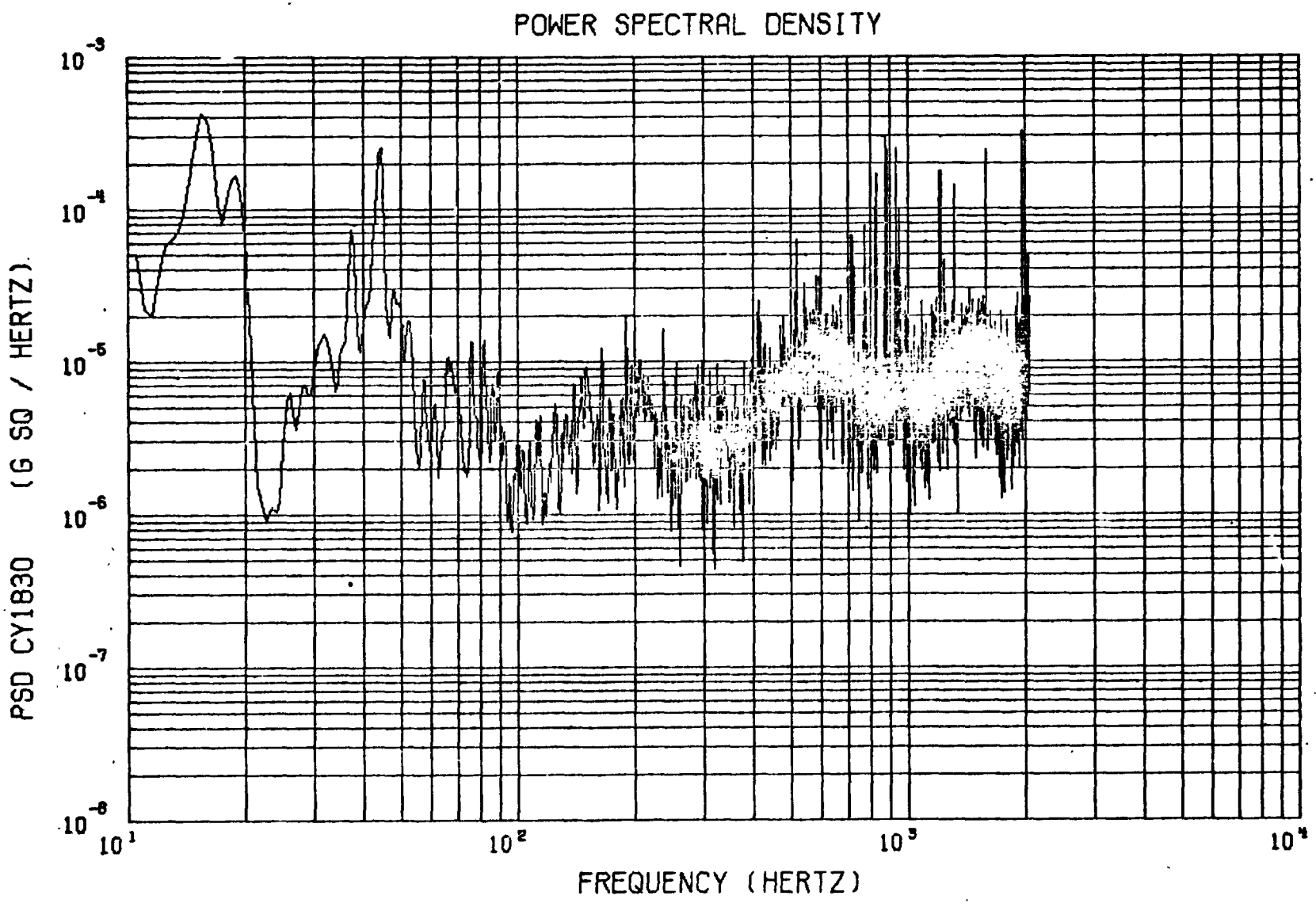
MAX = .427 MIN = -.787

VIKING B FLT (CIF) MAX Q - 3.5 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.75a



ΔF = .499 START = 67185.000 SEC STOP = 67186.999 SEC

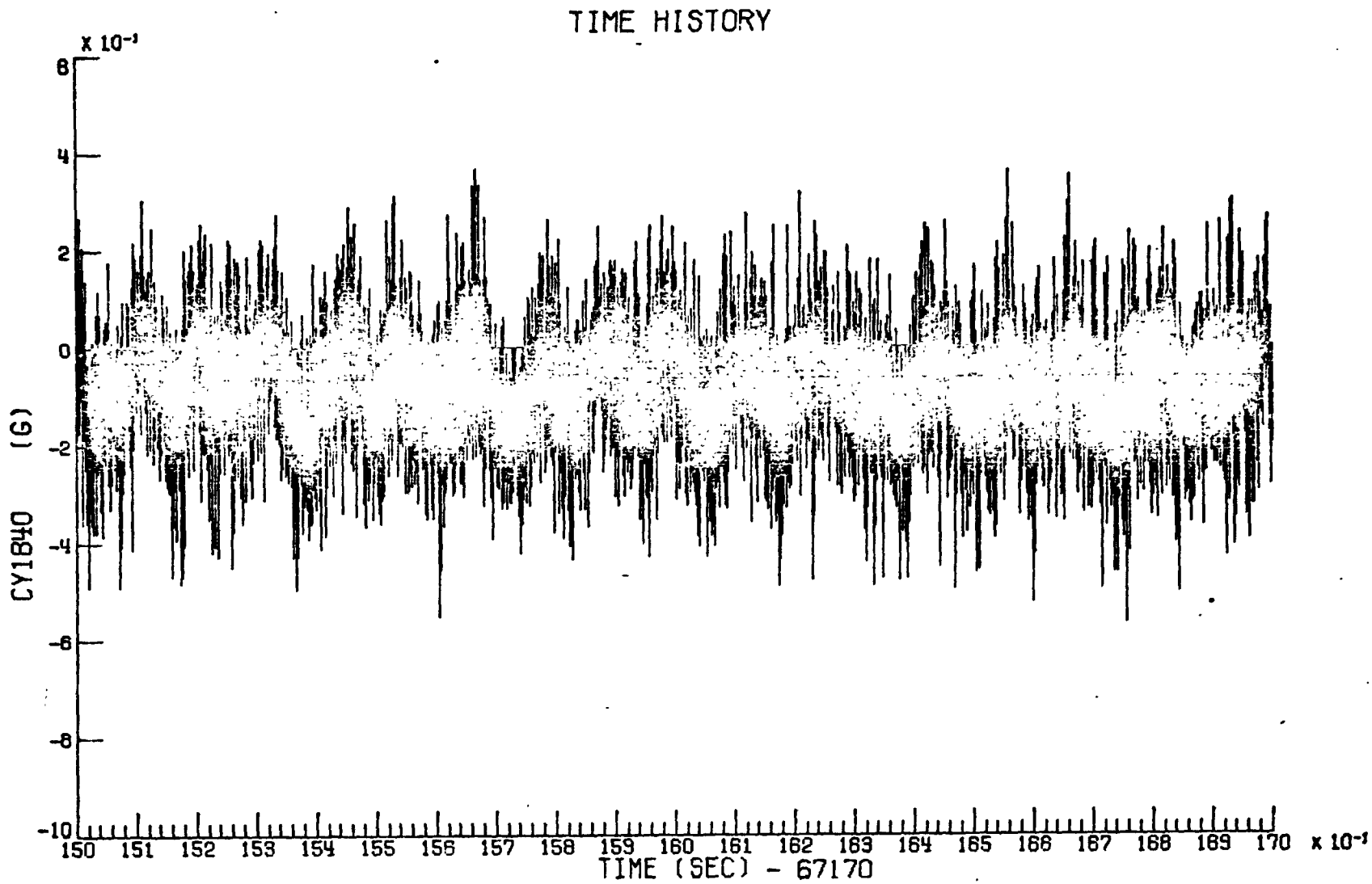
MEAN = -14272×10^{-5} $\sigma^2 = 27257 \times 10^{-5}$ $\sigma = 16509 \times 10^{-5}$ $3\sigma = 49629 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 3.5 CY1830

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.75b



MAX = .366

MIN = -.567

VIKING B FLT (CIF)

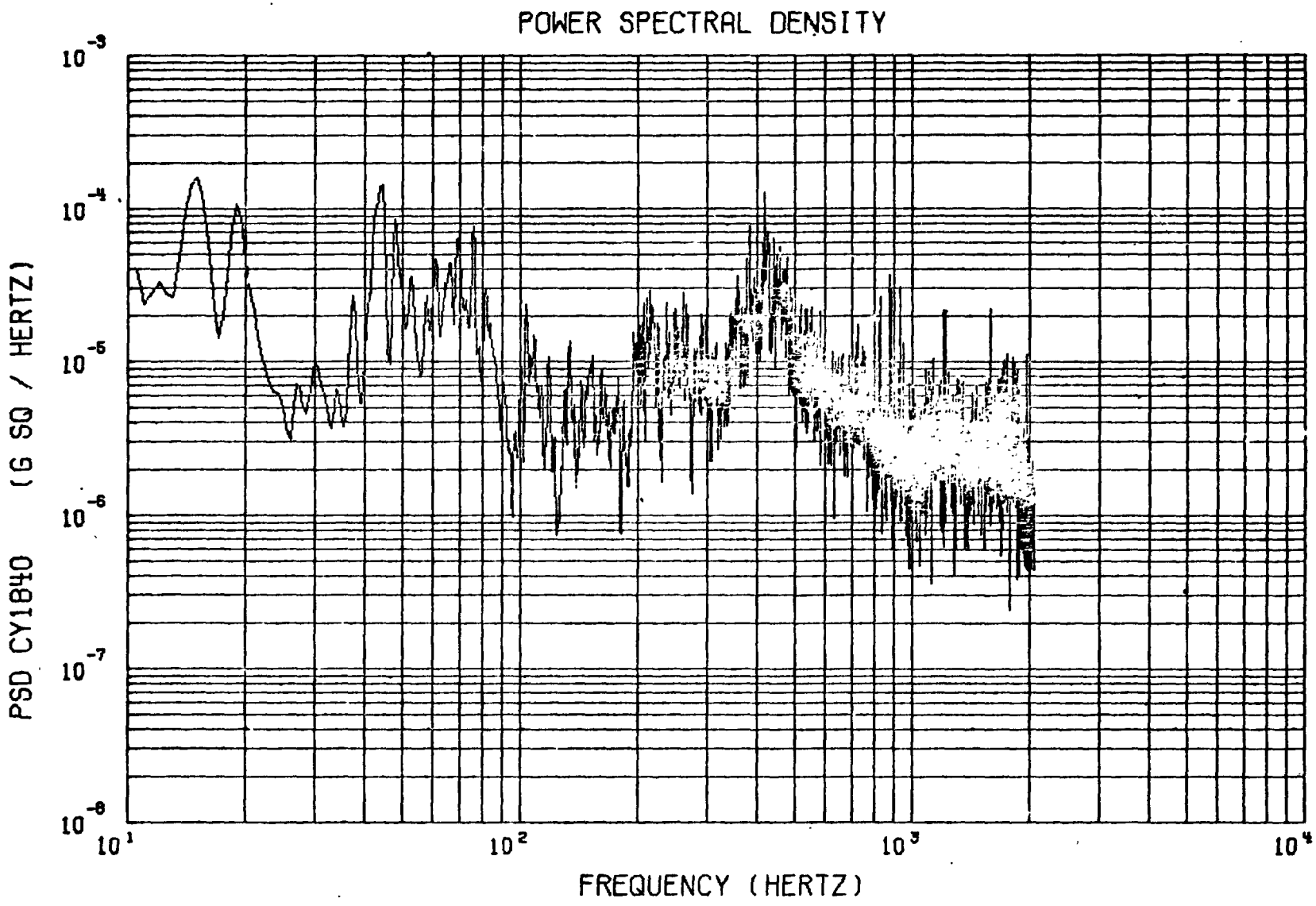
MAX Q - 3.5

CY1840

4096 SPS

Figure 4.76a

LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75



ΔF = .499 START = 67185.000 SEC STOP = 67186.999 SEC

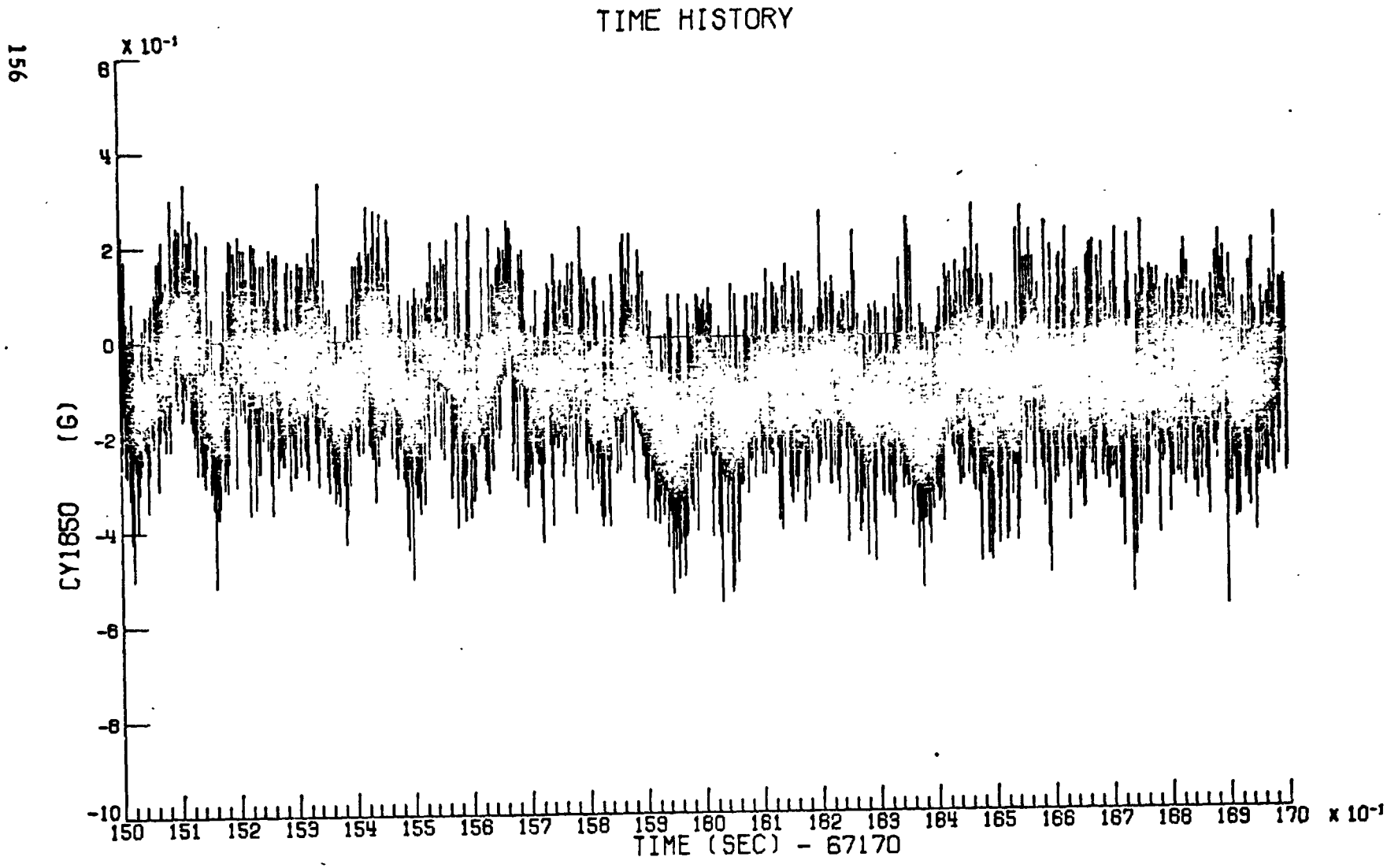
MEAN = -81273×10^{-8} $\sigma^2 = 16089 \times 10^{-6}$ $\sigma = 12684 \times 10^{-8}$ $3\sigma = 38053 \times 10^{-5}$

VIKING B FLT (CIF) MAX Q - 3.5 CY1840

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.76b



MAX = .333

MIN = -.572

VIKING 5 FLT (CIF)

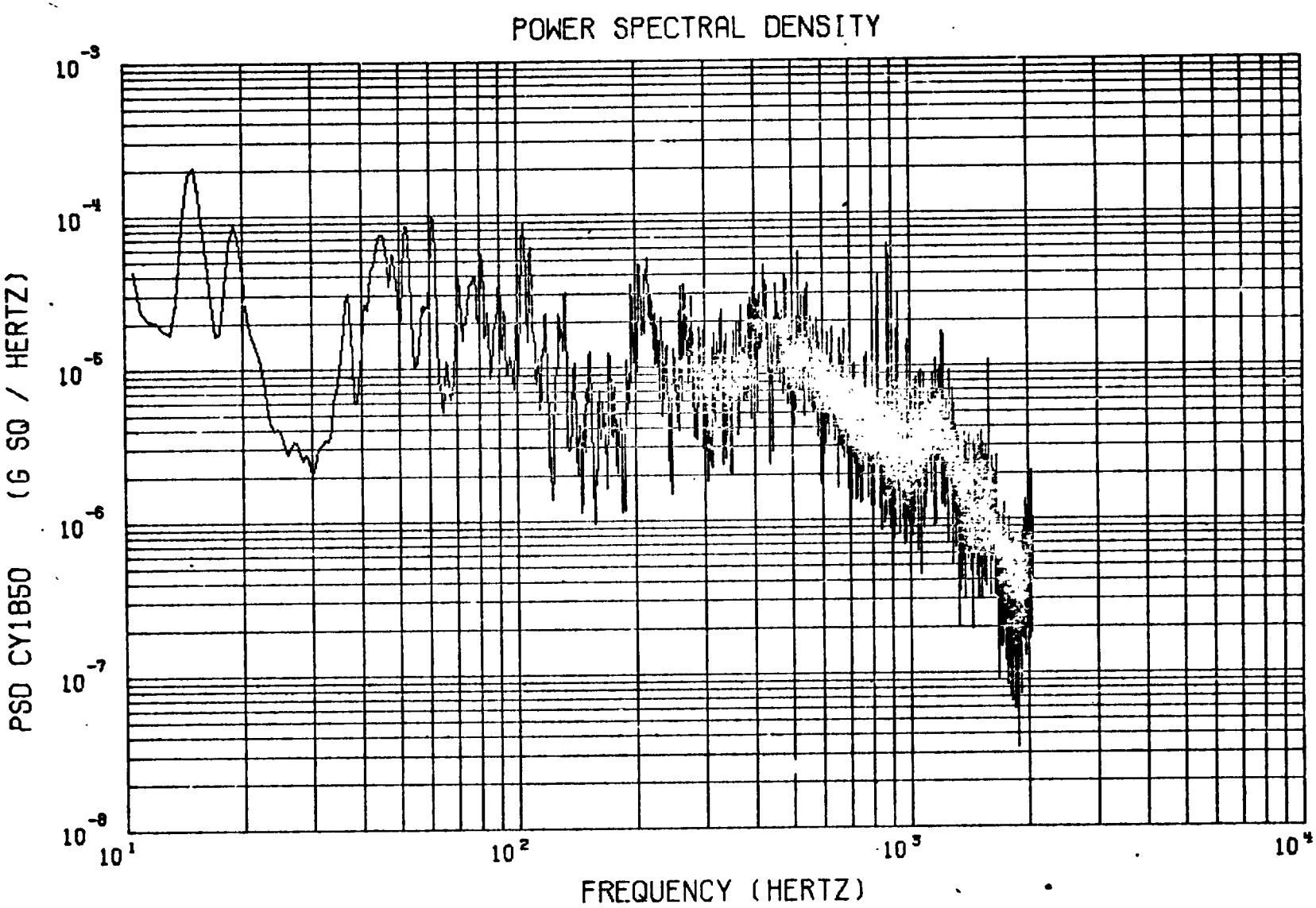
MAX Q - 3.5

4096 SPS

CY1850

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.77a



ΔF = .499 START = 67185.000 SEC STOP = 67186.999 SEC

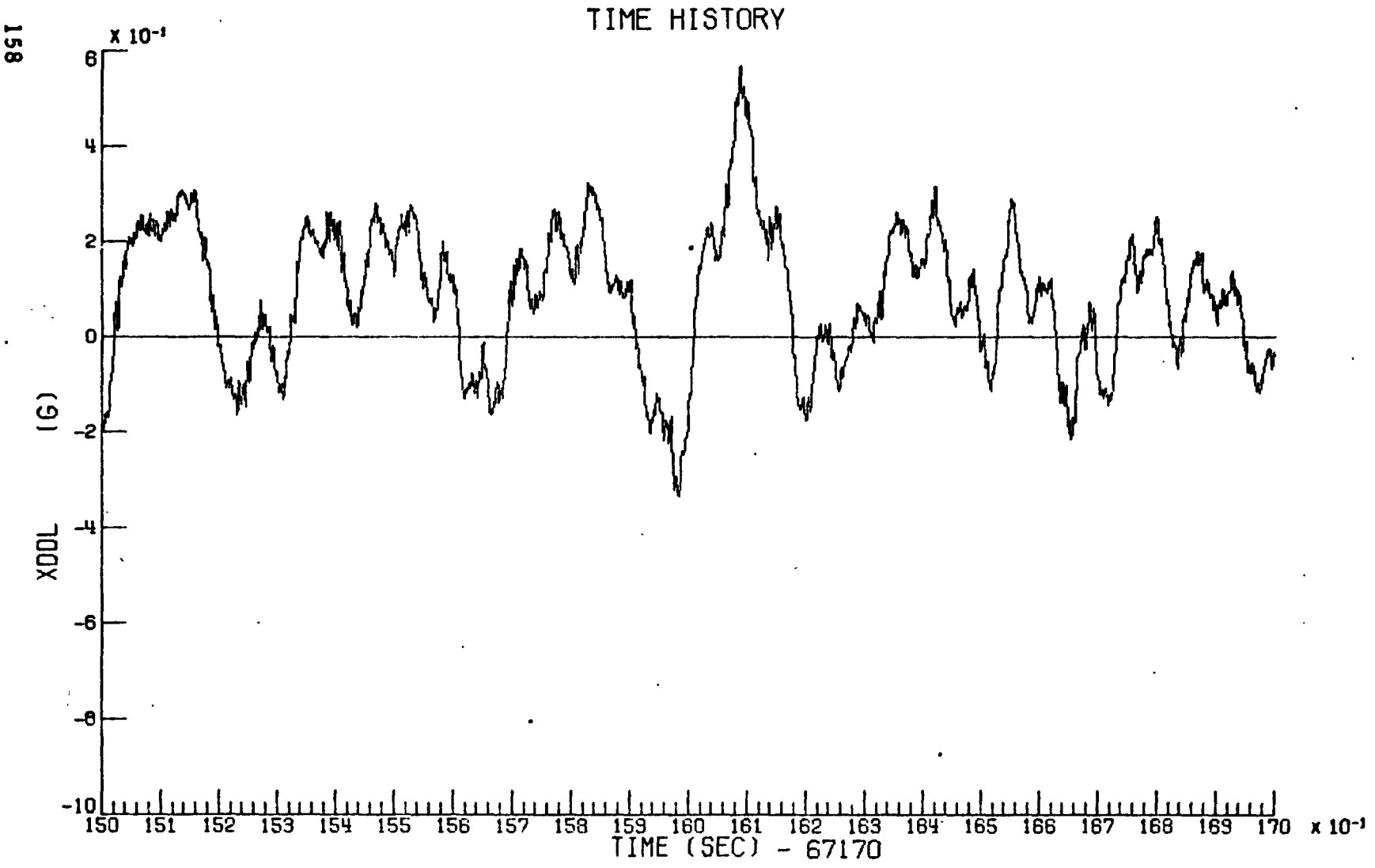
MEAN = -9847 x 10^{-5} σ^2 = 16506 x 10^{-5} σ = 12462 x 10^{-5} 3σ = 37357 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3.5 CY1850

4096 SPS

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/22/75

Figure 4.77b

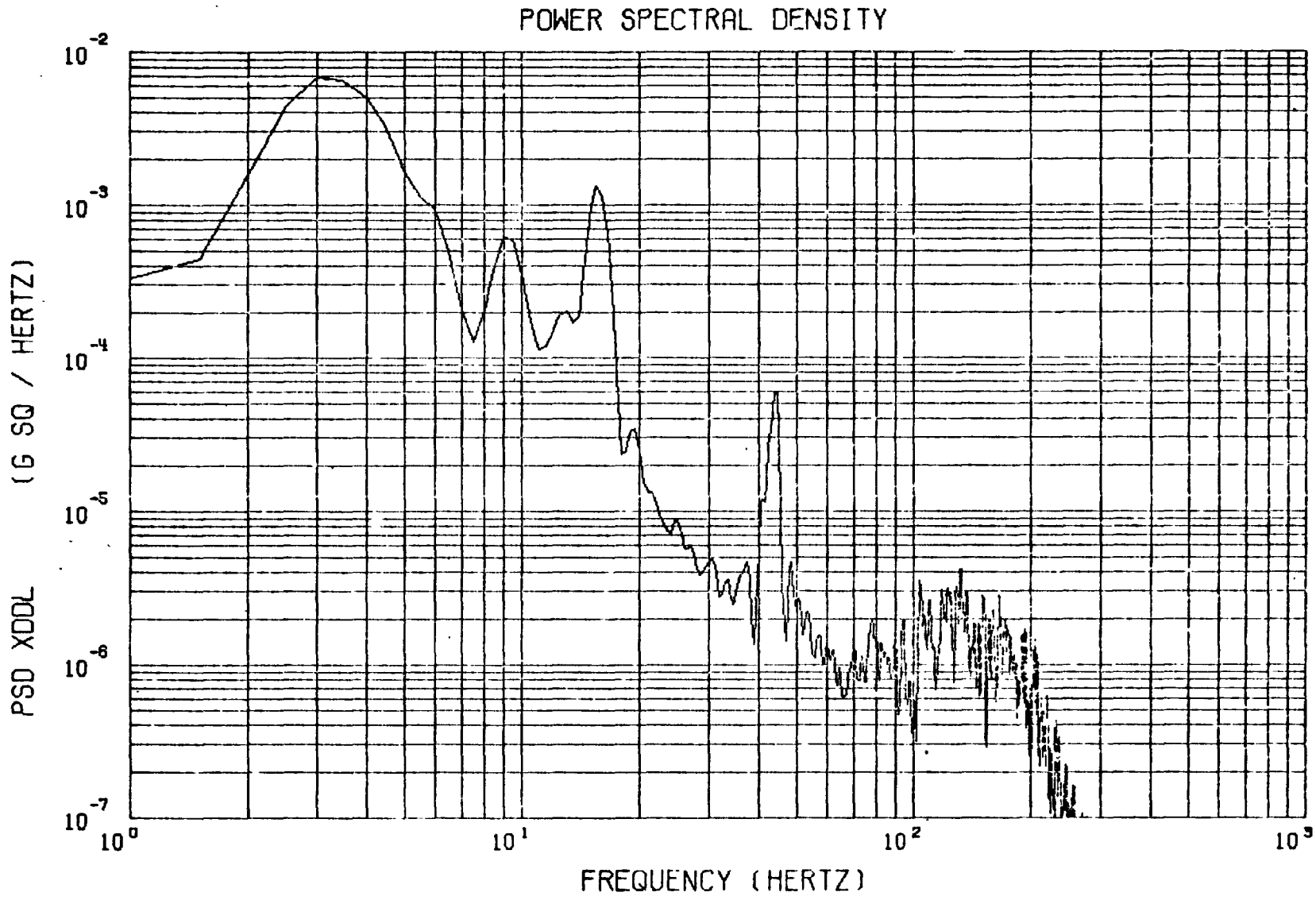


MAX = .568 MIN = -.330

VIKING B FLT (CIF) MAX Q - 3.5 XDDL

Figure 4.78a

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75



ΔF = .500 START = 67185.000 SEC STOP = 67186.999 SEC

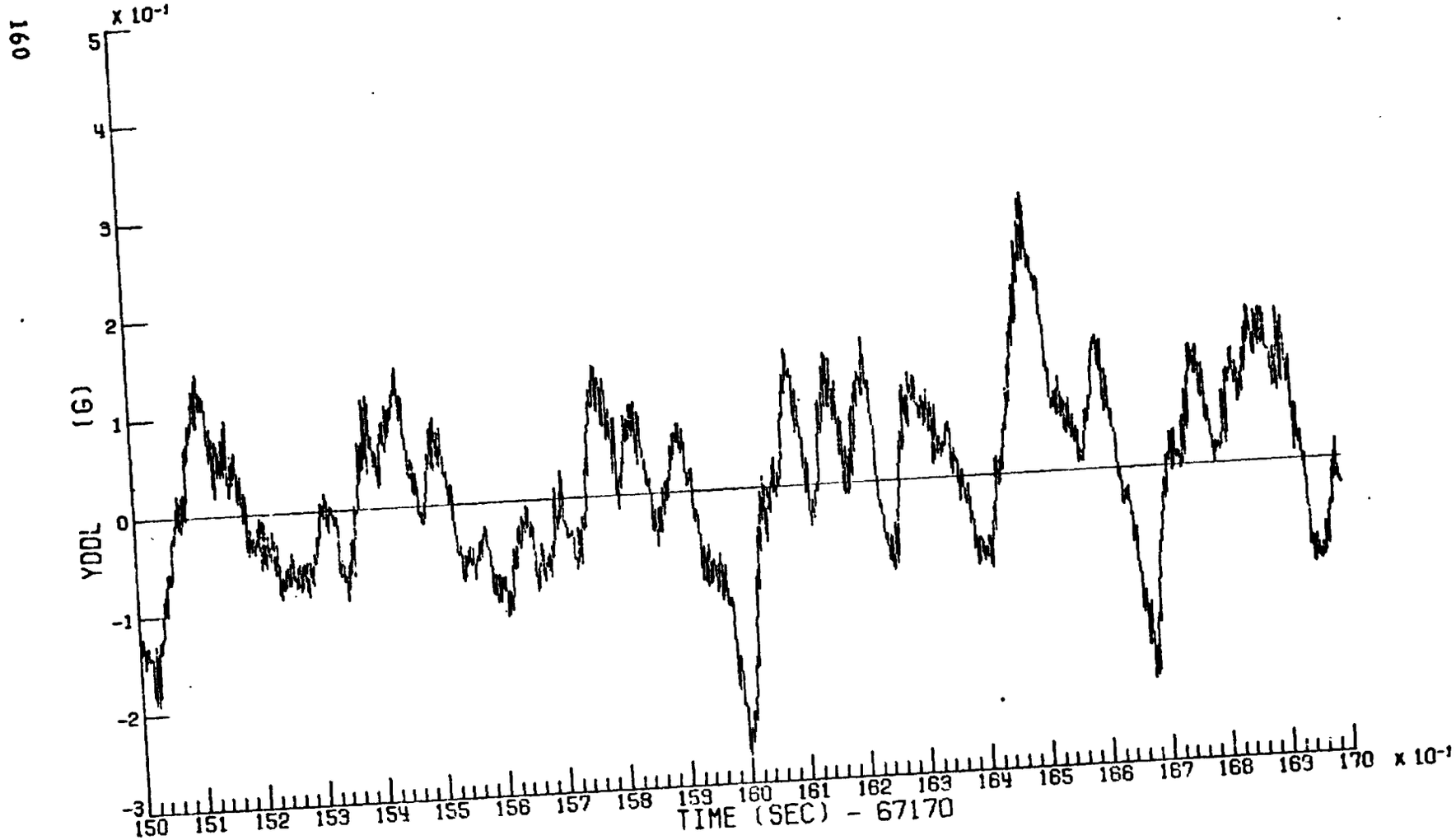
MEAN = 85259 x 10^{-5} σ^2 = 21523 x 10^{-6} σ = 1467 x 10^{-4} 3σ = 44012 x 10^{-5}

VIKING B FLT (CIF) MAX 0 - 3.5 XDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.78b

TIME HISTORY



MAX = .284

MIN = -.270

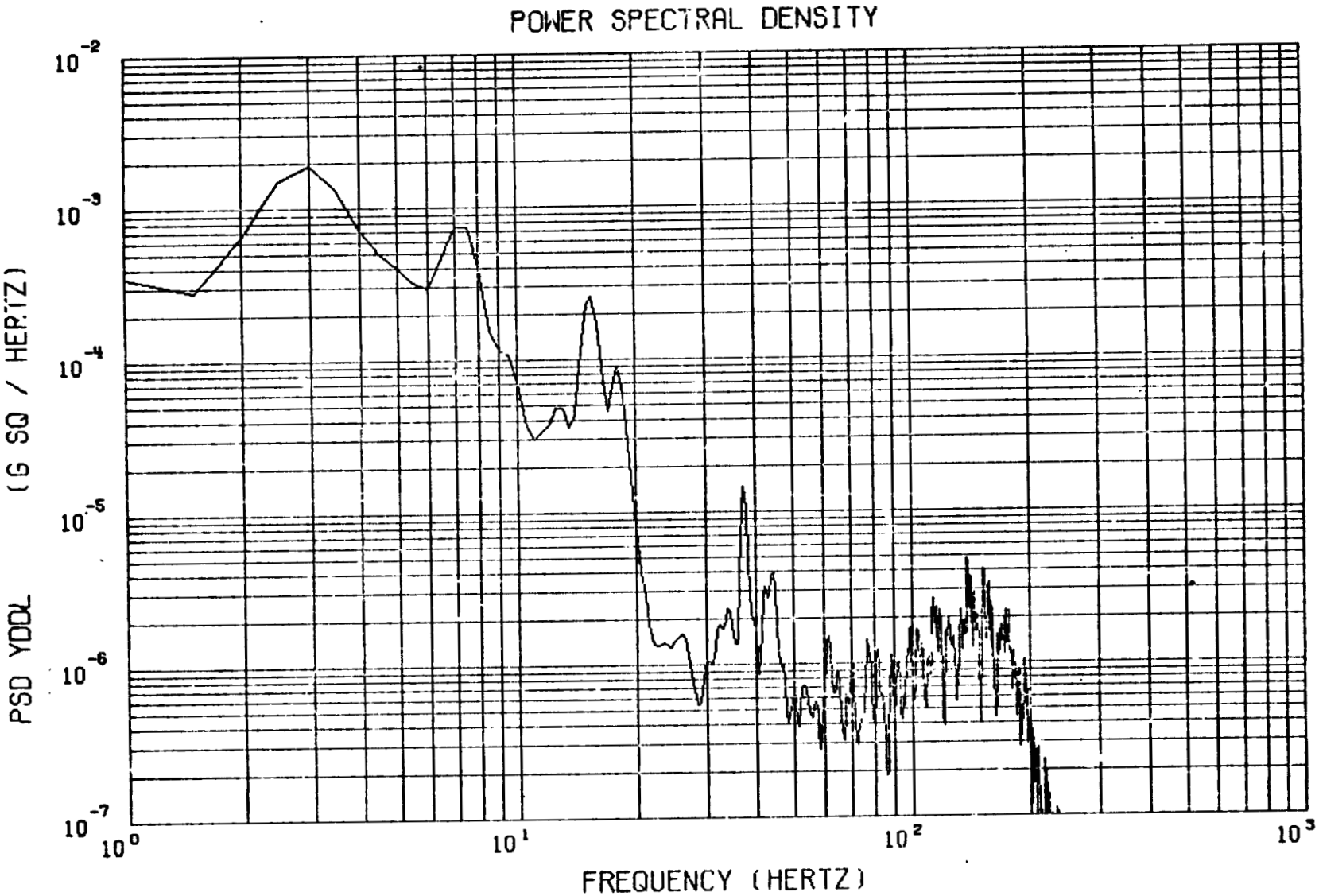
MAX Q - 3.5

YDDL

VIKING B FLT (CIF)

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.79a



ΔF = .500 START = 67185.000 SEC STOP = 67186.999 SEC

MEAN = 92034 x 10^{-7} σ^2 = 69577 x 10^{-7} σ = 83413 x 10^{-5} 3σ = 25023 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3.5 YDDL

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.79b

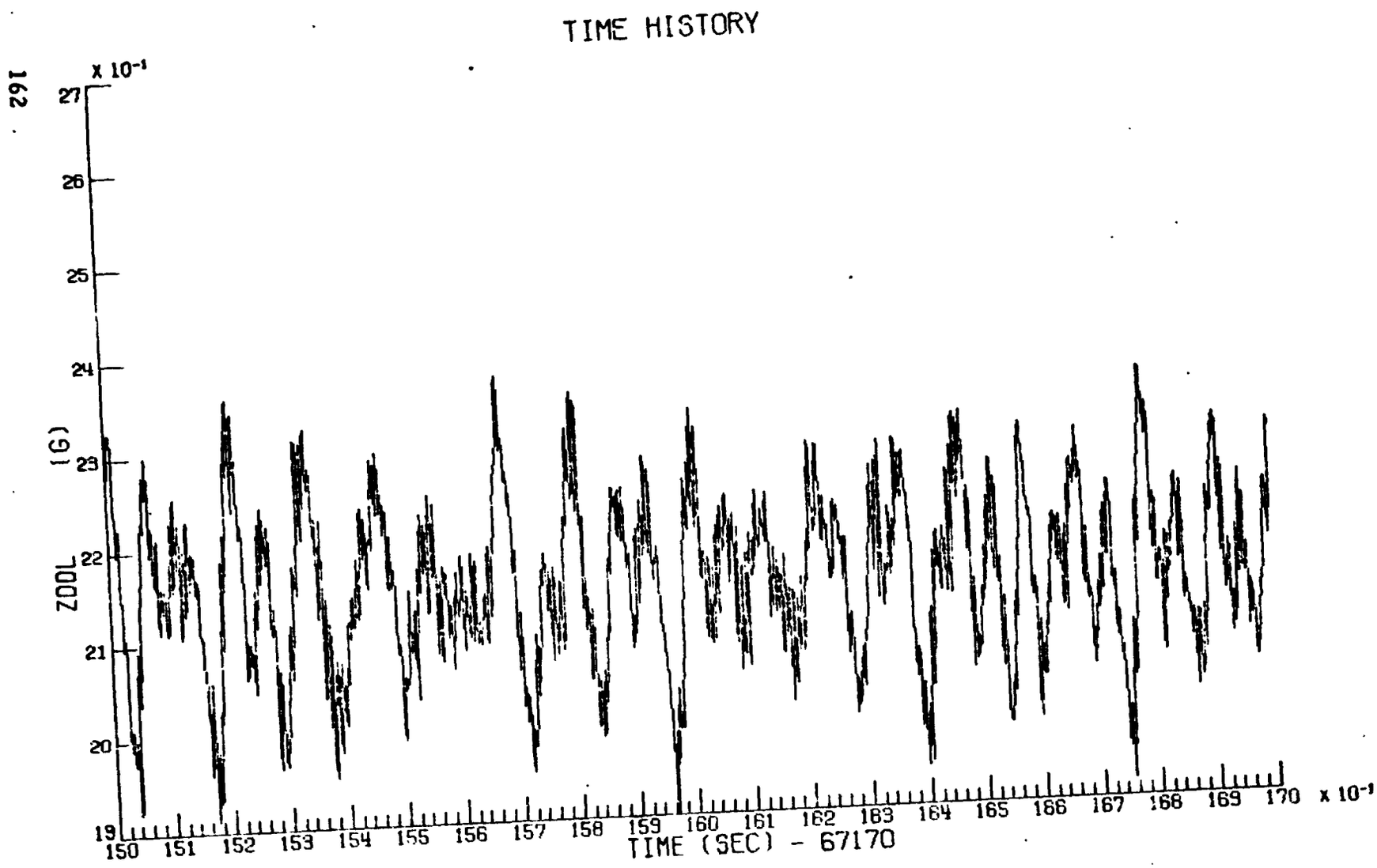
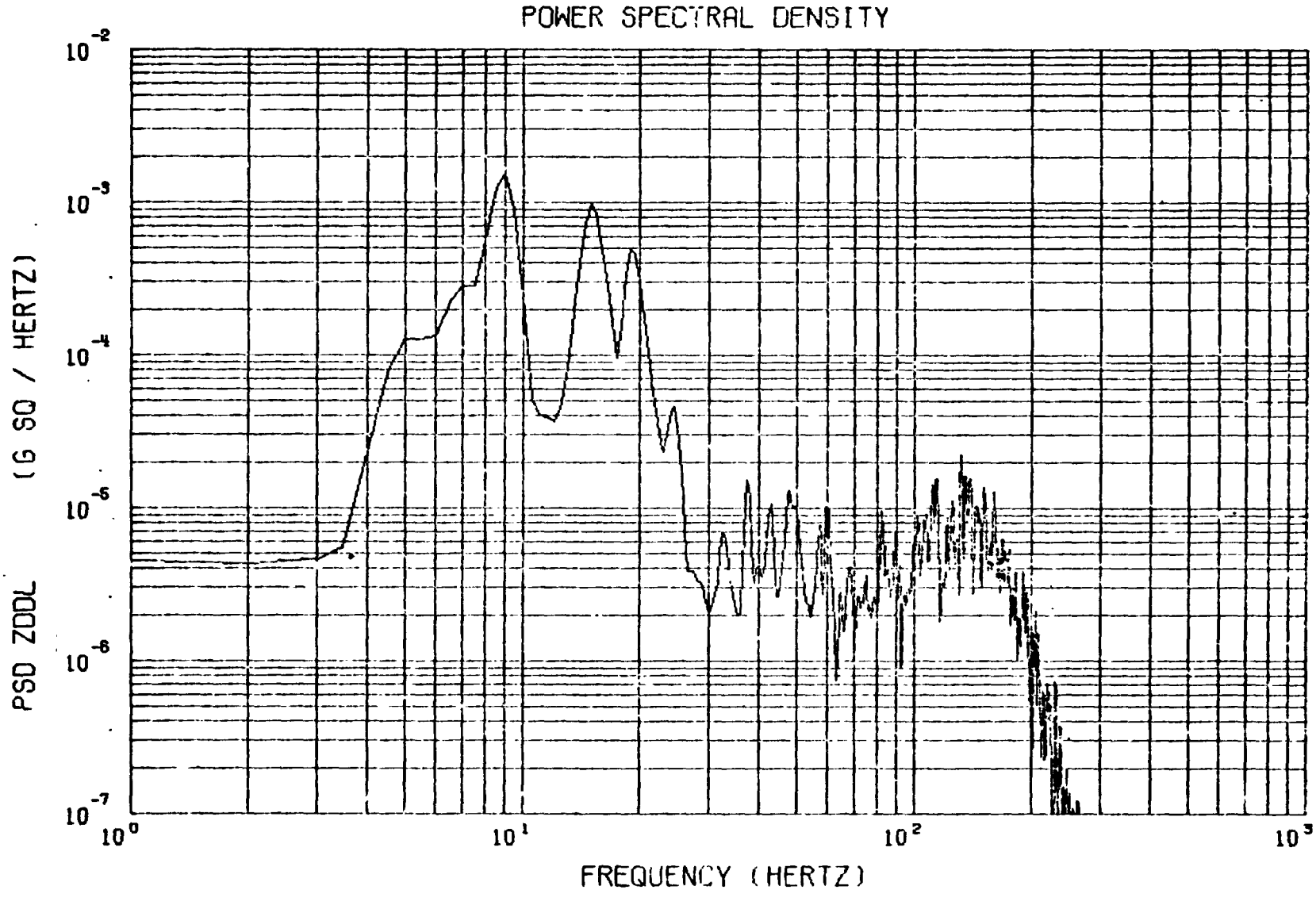

TIME HISTORY
162
X 10⁻¹
27
26
25
24
23
22
21
20
19
ZDDL (G)
150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 X 10⁻¹
TIME (SEC) - 67170
MAX = 2.372
MIN = 1.900
VIKING B FLT (CIF)
MAX G - 3.5
ZDDL
NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.80a



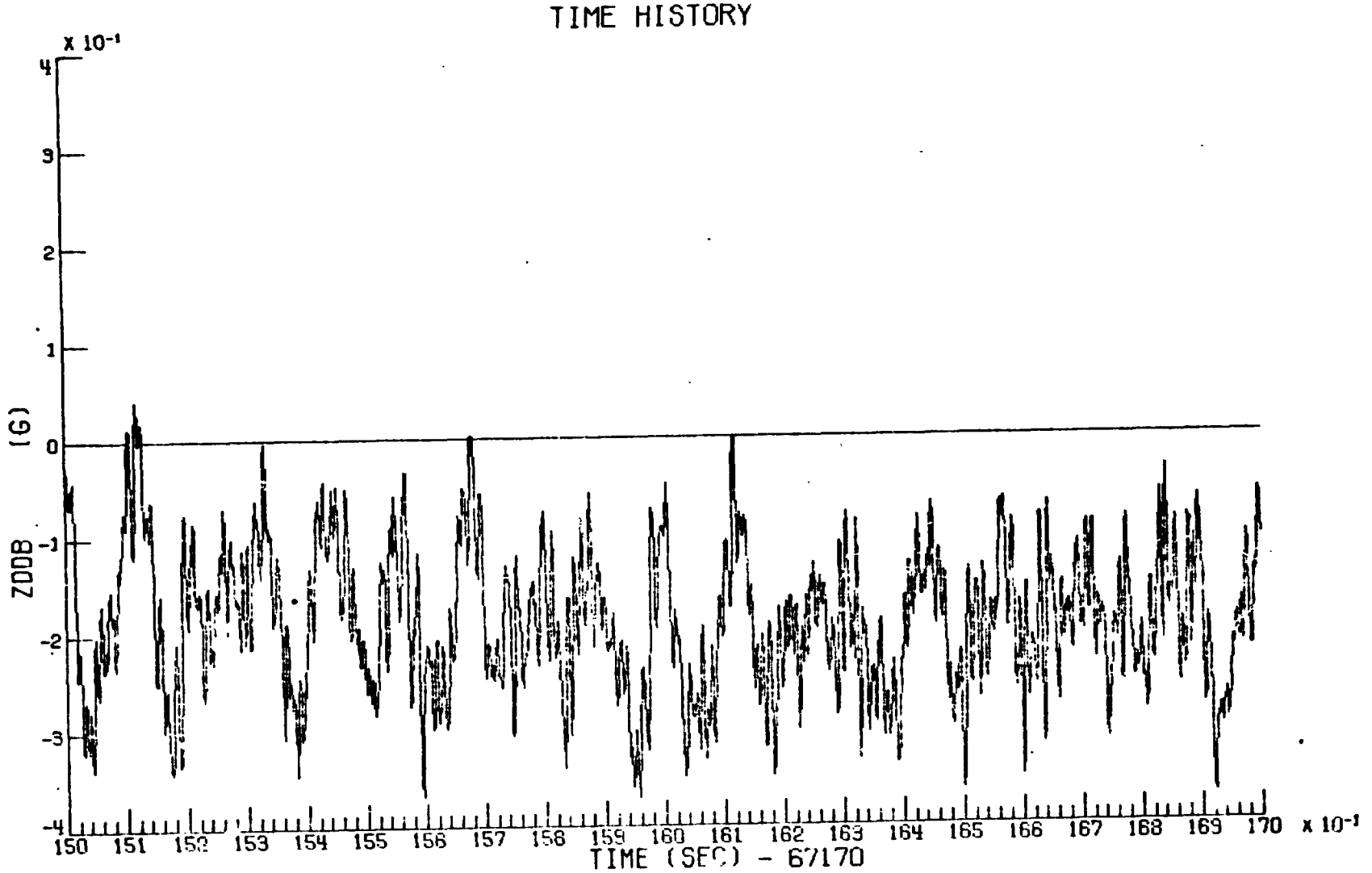
ΔF = .500 START = 67185.000 SEC STOP = 67186.999 SEC

MEAN = 21492 x 10^{-6} σ^2 = 72345 x 10^{-7} σ = 85056 10^{-6} 3σ = 25516 x 10^{-5}

VIKING B FLT (CIF) MAX Q - 3.5 ZDDL

NASA-LANGLEY STRUCTURAL ANALYSIS PROGRAM 05/23/75

Figure 4.80b



MAX = .041

MIN = -.371

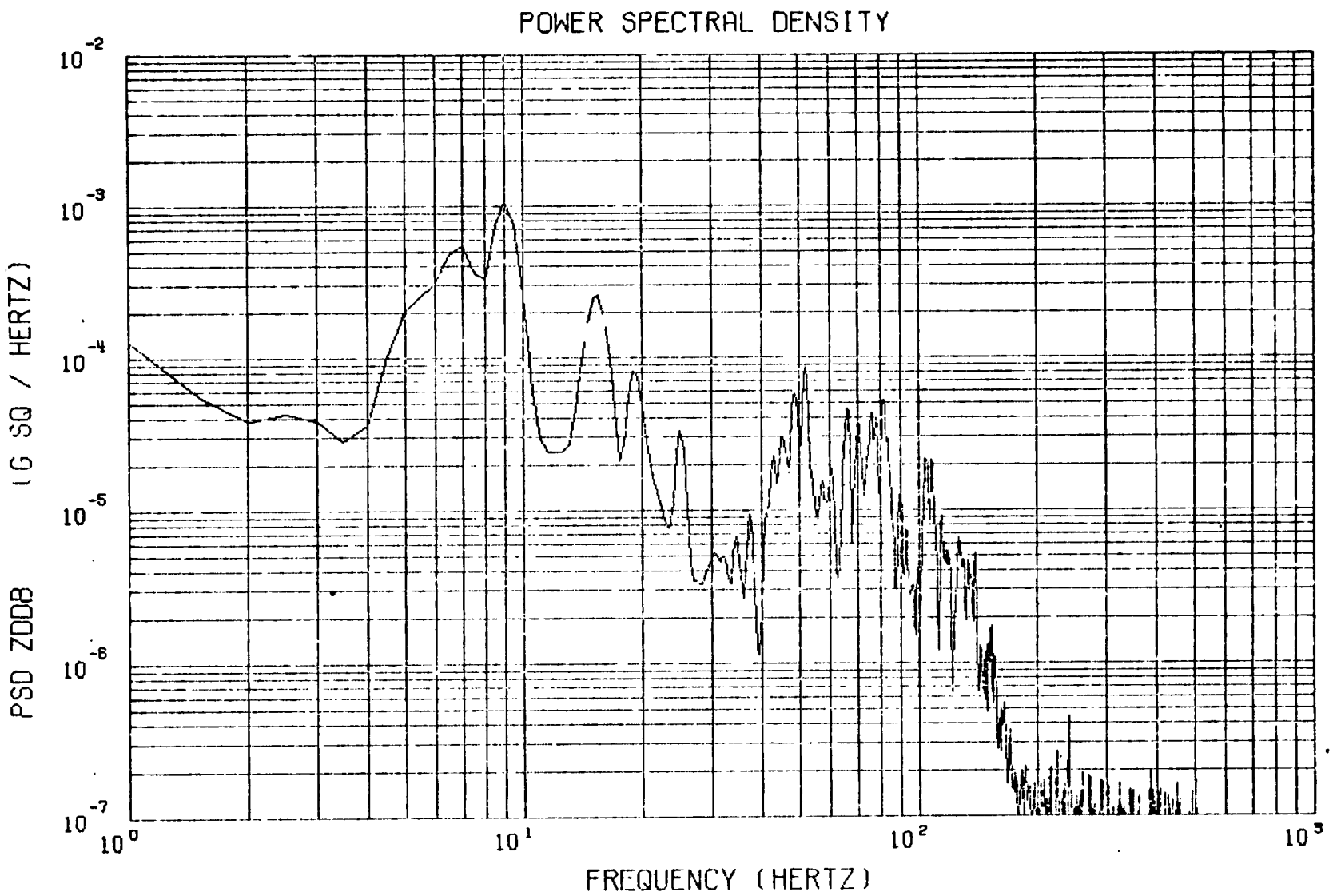
VIKING B FLT (CIF)

MAX Q - 3.5

ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 09/23/75

Figure 4.81a



ΔF = .500 START = 67185.000 SEC STOP = 67186.999 SEC

MEAN = -18855 x 10^{-5} σ^2 = 55374 x 10^{-7} σ = 74414 x 10^{-5} 3σ = 22324 x 10^{-5}

VIKING 8 FLT (CIF) MAX Q - 3.5 ZDDB

NASA-LANGLEY SIGNAL ANALYSIS PROGRAM 03/23/75

Figure 4.81b